Pacific Seabird Group

BULLETIN

Volume 19 Number 1 1992

Dedicated To The Study And Conservation Of Pacific Seabirds And Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 out of a need for better communication among Pacific seabird researchers. The Group coordinates and stimulates the field activities of members involved in research and informs its members and the general public of conservation issues relating to Pacific seabirds and the marine environment. Group meetings are held annually and the PSG *Bulletin* is issued biannually. Current activities include involvement in seabird sanctuaries, coastal surveys, seabird/fisheries interactions, and legislation. Policy statements are issued on conservation issues of critical importance. Although PSG's primary area of interest is the west coast of North America and adjacent areas of the Pacific Ocean, it is hoped that seabird enthusiasts in other parts of the world will join and participate in PSG. Annual dues for membership are $15 (individual and family); $10 (student, undergraduate and graduate); and $450 (Life Membership, payable in five $90 installments). Dues are payable to the Treasurer, whose address in on the back cover.

Pacific Seabird Group *Bulletin*

The Pacific Seabird Group *Bulletin* (ISSN 0740-3371) is published twice a year, in the spring and fall, and contains news of interest to PSG members, including regional seabird research and conservation news and abstracts of papers presented at the annual meeting. The Pacific Seabird Group *Bulletin* is not an outlet for the results of scientific research; however, articles and shorter items on seabird conservation, seabird research activities, and other topics related to the objectives of PSG are welcome. All materials should be submitted to the Editor. Back issues of the Bulletin may be ordered from the Treasurer: please remit $2.50 each for issues of Vols. 1-8 (1974-1981) and $5.00 each for issues of Vol. 9 and later.

Permanent Address

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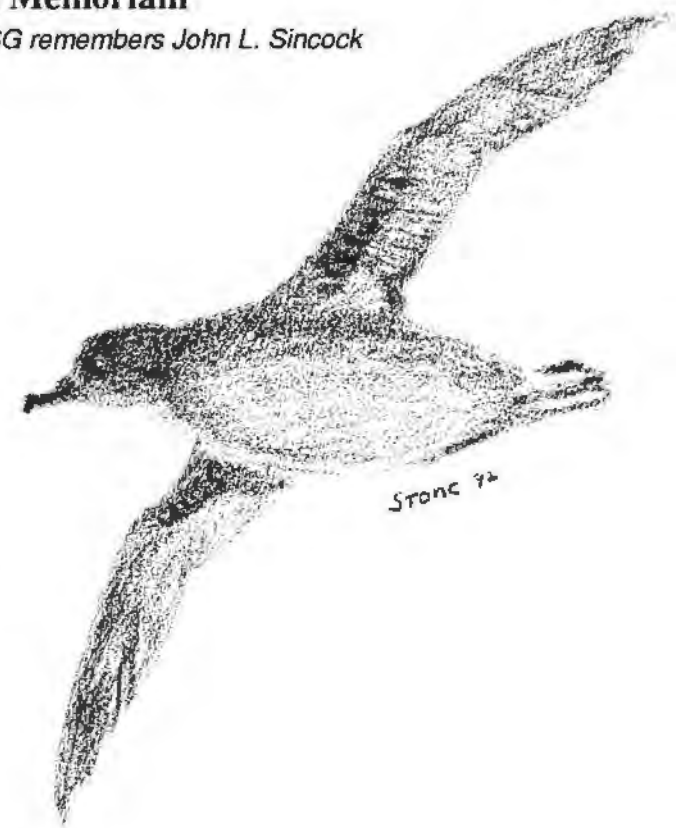
Stone 92



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The Chair's Page

Excellent papers, posters, discussions, and committee meetings dominated the Charleston, Oregon annual meeting. You missed a good one if you weren't there. Don't miss the February 1993 Seattle meeting—it promises to be even better.

A renewed energy is coursing through this organization. You could see it and feel it at the Oregon meeting (and it wasn't all due to Harry's Marvelous Marbled Merlot). Attendance was much higher than normal, and participation at committee meetings resulted in good work and some new directions. Ken Warheit reported on the results of his questionnaire, which identified the strong interest in conservation by PSG members. Many thanks to Ken for undertaking a difficult and time consuming task! His fine analysis is our first real measure of the membership's interests.

If the phone calls, notes, and letters I have received in the month since the meeting are any indication of the general mood among PSG members, then I have to say that people are getting with it. Issues that members have shown an interest in include fisheries and land management, endangered species, the *Bulletin*, awards, new membership, the Seattle meeting, and the Exxon Valdez investigations. These and other critical issues need our input and, where appropriate, our backing. Nationally, we need to support the reauthorization of the Endangered Species Act, necessary funding under the Nongame Bill, enactment and funding of the Biodiversity Bill. We need to work at elevating the awareness, appreciation, and protection of marine birds at the federal, state, provincial, and local levels throughout the Pacific Rim area. But it's up to you. Much is going on, and we can do some good things—but we need more member participation. You have the knowledge and the information to bring about change. Get involved! You don't have to necessarily advocate, just get the information before the people who make the decisions.

PSG has benefitted greatly over the past six years from the efforts of Malcolm Coulter. As editor of the PSG *Bulletin* for five years and as Chair of the Executive Council, Malcolm did much to ensure the health of PSG as it approaches its twentieth year. On behalf of the entire group I would like to thank Malcolm for his efforts.

Remember—we can accomplish only that commensurate with the energy put into it! More energy—more accomplishments. Participate! Give the committee chairs, officers, and me a call.

Palmer Sekora

Letter from the Editor

Dear PSG Members,

Here it is at last—my first issue of the PSG *Bulletin*. Working on the *Bulletin* has been an interesting and enjoyable experience. I want to thank everyone who has helped make my job easier. Thanks to all the Regional Representative who sent their reports in on schedule. Thanks to Craig Harrison for his conservation article and to Ken Warheit for his efforts on the PSG2000 Report. And thanks especially to George Divoky, without who's help I never could have managed. George's knowledge of PSG has been invaluable. Thanks again, George, and thanks to all the PSG members who have offered their support and encouragement.

I hope the new *Bulletin* format meets with everyone's approval. I made some changes, such as the two-column format and the running heads, to improve readability. Other changes are purely aesthetic, and still others, such as the narrower margins and smaller type size, were made with conservation in mind—the less paper we use, the better. You will notice the photo included in this issue. While photos add to the expense of publication, they also add a great deal of interest. I would like to encourage anyone who has a particularly interesting photo to consider including it in a future issue of the *Bulletin*, especially if it enhances the information in a particular article. I also would like anyone with any other graphics, such as line drawings of seabirds, to consider contributing them to the *Bulletin* files. Over the past twenty years, graphics have added much to the look and the character of the *Bulletin*: I want to thank all the artists who have so generously donated their drawings. But I also want to encourage others to send in their own artwork.

As far as content goes, the Bulletin Working Group has agreed that the focus of the *Bulletin* should be changed to include more seabird-oriented articles and information in order to attract a broader readership. In light of this change, I want to encourage the general membership to look for ways to contribute. Since the spring *Bulletin* is devoted mainly to the Annual Meeting and Regional Reports, perhaps the fall issue could be focus on conservation issues. Pay attention to local, state, and national conservation issues and research. If possible, write an article. If you can't do that, recruit someone who can or alert your Regional Representative or Craig Harrison to the issues you feel are worthwhile. It's important that everyone contributes. Let's make the PSG *Bulletin* a publication worthy of international attention.

I hope you will comment on the new design and let me know what you like and what you don't like, tell me what "works" and what doesn't. All comments and ideas are welcome. Remember, everyone's input is important.

Martha Springer, editor

P.S. After 1 July 1992, my new mailing address will be 1708 Marmot Hill Rd., Fairbanks AK 99709.

A Conservation Agenda for the 1990s: Removal of Alien Predator from Seabird Colonies

Craig S. Harrison

The Pacific Seabird Group can play a vital role in promoting seabird conservation by establishing proactive conservation programs. In the past, the Pacific Seabird Group has usually devoted its conservation resources to reacting to problems. As a major step in this new direction, the Pacific Seabird Group is developing an action plan to remove alien predators from colonies and former colonies where predators have caused or contributed to the decline of seabird populations. Many dedicated biologists and land managers have done an excellent, even heroic, job in removing predators from individual breeding islands. This work has proceeded by ad hoc, piece meal efforts and needs strong support from agencies and land owners on a comprehensive long-term basis because much has yet to be done.

The first step will be to identify the highest priority islands where rats, foxes and other introduced organisms should be removed in Alaska, British Columbia, Washington, Oregon, California, Hawaii and western Mexico. Once a priority list is created, the Pacific Seabird Group can work with land managers, helping to secure funding as necessary, to restore the natural biodiversity to the breeding islands. The action plan will establish a removal schedule with a goal of removing all predators within a decade. The Pacific Seabird Group will consider working with federal agencies to allow the use of toxicants for this purpose, even those such as 1080 that are currently banned. Armed with an action plan, the Pacific Seabird Group can influence funding and program decisions to insure the plan is implemented and island ecosystems are restored.

Funding and media attention with respect to seabirds during recent years have been directed toward driftnet fishing and the transportation of petroleum. These issues are certainly important to conserving Pacific seabirds. Patrick J. Gould, Douglas Johnson and Terry Shaffer estimate that the high seas driftnet fisheries in the North Pacific in 1990 drowned 416,000 birds. The *Exxon Valdez* disaster killed an estimated 350,000-390,000 seabirds. Large as these loses are, they are relatively minor compared to losses suffered from predators such as rats and foxes.

Predators occur on at least 59 islands in the Alaskan Maritime National Wildlife Refuge and depress the breeding population of seabirds in an amount equivalent to several *Exxon Valdez* oil spills each year. While an oil spill wreaks most of its havoc on seabirds in a single year, alien predators depress seabird populations year after year until they are removed. On the Hawaiian Islands National Wildlife Refuge, rats introduced during World War II on Midway have wiped out storm-petrels and Bulwer's Petrels, depleted Bonin Petrel populations and may even affect large seabirds such as Red-footed Boobies. Rats on Green Island, Kure Atoll, eat Sooty Storm-petrels (a potential endangered species) and even attack Laysan Albatrosses. The U.S. Coast Guard's LORAN station is being decommissioned there and Green Island's rats should be extirpated as part of that process.

There can be no doubt that alien predators devastate seabird colonies. After Kaligagan Island, Alaska, was stocked with foxes in 1921, its seabird population plunged so low that the renowned naturalist Olaus Murie recommended that it continue as a fox farm. In the 1980s, after foxes had died out, Kaligagan had 125,000 burrowing seabirds. Vern Byrd and Edgar Bailey found dramatic increases in bird populations after the Fish & Wildlife Service removed foxes from Nizki-Alaid Island, western Aleutians. Mark Rauzon's removal of cats from Jarvis Island, central Pacific, enabled blue-gray noddies and Christmas shearwaters to recolonize and populations of other species to increase dramatically.

The U.S. has entered into treaties that require it to make a good faith effort to remove predators from island ecosystems. The Western Hemisphere Convention provides a basis for the U.S. to provide funds to eliminate predators on seabird colonies in Mexico. The U.S.-Japan Migratory Bird Treaty requires the U.S. to take measures to control the introduction of live animals and plants which could disturb the ecological balance of unique island environments. The U.S.-U.S.S.R. treaty requires the U.S. to enhance the environment of migratory birds and to abate detrimental alteration of that environment. The federal government is negotiating with Russia concerning the establishment of international parks and refuges adjacent to the Bering Sea that would be jointly managed. By all means the U.S. should enter into new agreements to establish international parks and refuges in the North Pacific. In doing so, however, the government should not forget its unfulfilled commitments in the migratory bird treaties with Russia and Japan.

By establishing an action plan, the Pacific Seabird Group can highlight the importance of predator removal. The Fish & Wildlife Service's regional marine bird policy looks great on paper. Region 1 (Portland) intends to "remove all introduced predators from marine bird colonies on all National Wildlife Refuges and encourage their removal from all other colonies." The Pacific Seabird Group can insure that the policy is implemented in the field throughout the North Pacific.

PSG2000 COMMITTEE 1991 REPORT

Ken Warheit, Chair & Author of Report
Malcolm Coulter, George Divoky, Craig Harrison, Burr Heneman,
Palmer Sekora, Doug Siegel-Causey

In November 1990 Doug Siegel-Causey, then Chairperson of PSG, asked Craig Harrison and Palmer Sekora to form an ad hoc committee to evaluate "the state of PSG" in terms of its strengths and weaknesses and to suggest avenues through which the society may improve. Although Doug did not limit the scope of the committee, he did ask the committee to evaluate (1) if conservation issues were adequately covered during the annual meetings and in the *Bulletin*; and (2) whether the direction and goals of the society reflected the interests of its members. Doug also requested that the committee suggest ways in which the society can (1) increase the involvement of amateurs in seabird-related activities, (2) increase our funding base, (3) increase the number of new members and increase the participation of current members in PSG activities, and (4) improve the bulletin.

Craig and Palmer enlisted the help of George Divoky, and in February 1991 the PSG2000 Committee provided a preliminary report to the PSG members attending the annual meeting in Monterey, California. This report took the form of a written document submitted to the Executive Council and made available to the general membership; the contents of the report were discussed at a well-attended meeting of that membership. Membership participation at this meeting was lively and at times opinionated. The meeting was quite productive, and one successful product of the 1990 PSG2000 Committee was the creation of the new Executive Council position of Vice-Chair for Conservation. The tasks of the 1990 PSG2000 committee were not completed at the time of the Monterey annual meeting, and the committee suggested that it reform in 1991 with additional members and ideas. Malcolm Coulter, Burr Heneman, Doug Siegel-Causey, and Kenneth Warheit were asked to join George Divoky, Craig Harrison, and Palmer Sekora in forming the 1991 PSG2000 Committee.

During the interval between the 1991 (Monterey, California) and the 1992 (Charleston, Oregon) annual meetings, over 30 letters were circulated among PSG2000 members dealing primarily with six general topics: (1) communication among members, but mostly among Executive Council members, (2) leadership and sharing responsibilities for the running of the organization, (3) conservation, in particular Vice-Chair for Conservation, (4) membership, (5) money, and (6) structure of the Executive Council, in particular, the function and responsibilities of the Regional Representatives. The committee decided that before it can tackle any problem dealing with the membership's perception of the current and future roles for PSG in research, conservation, and advocacy, we needed to know more about the demographics of the society, and the goals and opinions of the membership. To this end, the committee designed and implemented a general survey of the membership. The results of this survey (see accompanying article) were quite informative and helped the committee make specific recommendations concerning the structure of PSG and its Executive Council, fund raising, and communication.

The 1991 PSG2000 committee focused most of its collective energies on two issues: (1) the structure and composition of the Executive Council, and (2) the function, responsibilities, and value of the Regional Representatives. Members of the committee felt that the Executive Council was too large and that there were two many Regional Representatives (i.e., from PSG's point of view the world was divided into too many regions). It was also clear that although some Regional Representatives were doing an excellent job in reporting the activities of the members in their region, as well as spotting and discussing important conservation issues, many Regional Representatives reported little information to the *Bulletin*. In defense of these Regional Representatives, it was clearly apparent that the general membership was either delinquent or disinterested in reporting to their Regional Representatives. There was also the confusion as to which Regional Representatives a member should report: the representative in the region where they lived or the region where they conducted research. The PSG2000 committee drafted a report to the Chairperson of PSG (Malcolm Coulter), and presented their findings to the general membership in Charleston, Oregon on 17 January 1992.

REGIONAL REPRESENTATIVES AND THE EXECUTIVE COUNCIL

After much debate, the PSG2000 committee and the roughly 100 members attending the 17 January meeting made the following suggestions. It was agreed (not unanimously) that the current procedure used by the Regional Representatives is inefficient and troublesome. We recommended that the number of PSG regions be reduced from 11 to 8 or 9, with the following alignment: (1) Alaska / Russia, (2) Canada, (3) Washington / Oregon, (4) Northern California, (5) Southern California, (6) the rest of the United States, excluding Hawaii, (7) Europe, Africa, Asia (except areas included in other regions), and (8) the Pacific Rim, includ-

Latin America, Pacific islands, Hawaii, New Zealand, tralia, and Japan. If the last region becomes too awk- d or burdensome, it can easily be split into two regions. hough in the space provided here we cannot present the plete justification for this new alignment, we can say it was based on a combination of factors, including the nographics of the society, the geographic distribution of embers, and the similarities in ecosystems and goals of icular regions (e.g., Alaska and Russia are not only graphically close, but share many ocean basins and bird communities). These suggestions are not written in e and will only go into effect after new bylaws are posed and voted on by the general membership.

In addition to reducing and changing PSG's re- ns, we also recommended that requests for information m the members NOT be sent by individual Regional presentatives, but by the bulletin editor or secretary. In t, this has already be implemented. This year, a pamphlet s sent by the new bulletin editor, Martha Springer, uesting members to initiate their contact with their gional Representatives. The names and addresses of all gional Representatives were listed on the pamphlet and mbers could choose where they send their information. is will reduce the responsibilities of the Regional Repre- ntatives to a more manageable load. The representatives now responsible for making follow-up phone calls if y choose, for compiling membership information from ir region, and for presenting this information to the *lletin* editor.

Finally, the committee recommended that only the mediate Past Chair serve on the Executive Council. This uld reduce the number of years a chairperson would ve on the council from 5 years (Chair-elect, Chair, and 3 ars of Past Chair) to 3 years. Prior to this and other anges there were 19 seats on the Executive Council Chair-elect, Chair, 3 Past Chairs, Secretary, Treasurer, ulletin Editor, and 11 Regional Representatives). By ducing the number of Regional Representatives to 8 (see ove), eliminating 2 of the 3 Past Chairs, and adding the ice-Chair for Conservation, the new Executive Council ill consist of 15 seats. Although the Vice-Chair for Conservation has already been approved and implemented Craig Harrison is PSG's first Vice-Chair), all other changes ust be enacted as changes in the bylaws, and voted on by e general membership.

MEMBERSHIP AND FUND RAISING

Besides the structure of the Executive Council, membership and funds are the two other issues of vital importance to PSG. Ken Warheit has suggested in his review of the PSG survey that PSG should increase its efforts to recruit undergraduate and graduate students, particularly in the Pacific Northwest. Members at universities should help here, although relying on particular individuals to recruit new members in not a good idea. PSG could place ads in the *Auk*, *Condor*, *Wilson Bulletin*, *Journal of Field Ornithology*, bird journals in Europe, South Africa, Asia, *American Birds*, *Audubon*, *Wildlife Management*, etc. Another alternative is direct mail solicitations (with a sample Bulletin). This may be more cost effective than advertising in journals or magazines.

Increasing membership will increase our funds, but there are other ways to increase our general funds and endowment. We make the following suggestions and hope this will inspire more.

(1) Annual meeting registration fees for non-members should be increased by $10.00 beyond that paid by members For the additional $10.00, the non-member becomes a member, and will receive the Bulletin for that year. In the following years, that person will get billed at the appropri ate rate.
(2) Solicit funds from foundations or corporations.
(3) Solicit Life Members for contributions to the endowment fund.

COMMUNICATION

Problems with our internal communication are usually problems with individuals and not one of policy. So, we will leave this alone. However, PSG is confronted with how we should increase our communication with other seabird organizations, governments, non-government types, media, etc. There is much room for dialog here, and this should be the main topic of debate after we resolve our problems with organizational structure. We should investigate the means by which we could distribute information electronically (e.g., electronic bulletin board) because this will be one of the primary methods of communication in the very near future.

PLEASE SEND ANY COMMENTS CONCERNING THESE SUGGESTIONS TO KEN WARHEIT, 410 PEREGRINE DR. SE, OLYMPIA, WA 98503

RESULTS FROM PSG SURVEY

Kenneth I. Warheit
Chair, PSG2000 Committee

By the beginning of November 1991, 236 PSG members responded to our survey (8 members responded after 7 November, and were not included in the summary statistics). That's a 64% response rate, counting all members that are paid through 1990! A survey within an organization is usually considered a success if 20 to 30 percent of the membership respond. A 64% response rate is phenomenal; I consider the survey a huge success, and I thank the membership for their interest in the survey and dedication to the society. The following is a general summary of the results of the survey in terms of absolute numbers, percentages, and trends. I also include my interpretations of these data. If there are any questions concerning this survey, please feel free to contact me.

ESSAY QUESTION (Directions or Goals)

Of the 236 total responses, 136 people answered the last "essay" question. I took some liberties with this last question and pigeon-holed the answers into 9 different categories (see summary sheet): **Conservation** included any statement concerning seabird management, conservation advocacy, education (concepts, not communication), commercial fisheries impact, etc.; **Research** included any statement concerning the collection and/or analysis of data; **Communication - General** included any statement concerning the communication of ideas or research results to other organizations (government or non-government), the media, non-profit, industry, etc.; **Communication - Bulletin** included any statement concerning the communication of ideas or research results in the *Bulletin*, or any statement concerning the *Bulletin* itself; **Communication - Journal** same as Bulletin, except in a journal format, with or without Colonial Waterbird Society; **Communication - Annual Meeting** included statement concerning the importance of the annual meeting as a vehicle to communicate data and ideas; **Membership** included any statement about the status and future potential of our membership; **Colonial Waterbird Society** included any statement that mentioned CWS by name (this is obviously not independent from "Journal" - a statement such as "PSG should publish a journal with CWS" would get a check in both boxes); and **Realignment of Regions** included any statement about the current boundaries of our regions.

Clearly, most of the membership who responded to this question considered conservation and communication as the most important goals for PSG during the next 10 years. For the most part, these members would like PSG become more visible in seabird conservation, but necessarily from an advocacy point of view (although were many people who felt PSG should be an adv organization). According to those responses, PSG s communicate seabird facts to particular agencies, orga tions, etc. However, there were concerns by several m bers who explicitly stated their reservations about bec ing too involved in conservation, especially in ter advocacy. In general, most of the people who respond this question saw PSG as an organization that should i tify problems concerning seabird conservation, and suggest responses to these problems. The identificati the problems and ranges of responses should be base sound scientific data (not necessarily collected by m bers). In addition, PSG may be in a position to compile distill data concerning seabird po lations, oceanographic trends, etc., and communicate information to appropriate agencies, organizations, or p sons. Although most people did not explicitly state h these data should be communicated, of those people that respond more people mentioned a journal by name than *Bulletin* - although its not clear if the people advocatin journal want the publication to be strictly academic, co taining only "scholarly" studies and results from perso research.

GEOGRAPHY

The geographic distribution of the current membership better documented in our accounting records than th survey. According to the summer 1991 accounting record our geographic distribution is as follows:

REGIONS	#	%
Alaska	54	15
B. C. / Washington	60	16
Oregon / N. California	27	7
C. California	64	17
S. California	37	10
Pacific	27	7
Great Lakes	21	6
Inland	17	5
Northeast	27	7
Southeast	24	7
Mexico (Latin America)	8	2

ifornia to Alaska accounts for 66% of our membership. t stands now, each region has a 9% representation on the rd (1/11). Thus, Alaska, B.C./Washington, and C. ifornia are under-represented, while Mexico, Great Lakes, Inland are over-represented. Oregon / N. California, S. ifornia, Pacific, Northeast, and Southeast are about t.

Although only 151 of the 236 total responses an- ered the "Past Section" of the Geographic question, some ds are worth addressing. Direct comparisons with the rrent Section" are tenuous because the two sections are independent, and while a person may have lived in a mber of geographic regions in the past, s/he lives in only geographic region in the present. Nevertheless, it ears that the basic geographic distribution of our current mbership in the past was not drastically different from of today. But there are some exceptions. Compared to total geographic distribution of those members that ponded to the survey, a higher relative number live in the rtheast, Pacific, and B.C./Washington regions today n they did in the past. This is also true, but to a lesser ent for Southern California. Conversely, a fewer number current members live in Alaska, Oregon, and Northern ifornia today than they did in the past. It is important to phasize that these are the relative geographic distribu- ns of our current members. In fact, if many past members m a particular region quit the organization this would not reflected in this survey. In addition, although Oregon/N. ifornia showed a relative decline based on our current mbership, 40 percent of the 1988 cohort that responded the survey currently live in Oregon or Northern Califor- . Therefore, these trends are very general, but do reflect fact that if our current members are going to move, nces are they will move to a coastal region with an active SG membership. In other words, our current membership not flocking in hoards to Kansas (or to Central California hich is curious).

Concerning the Annual Meeting question, I think it pretty obvious that if we had an annual meeting east of the rra Nevada/Cascades, few people would attend. Our st bets are Central California to Washington or British lumbia, or possibly Southern California. Alaska, Mexico, d Hawaii are riskier (and more expensive to get to), but th good organization and/or a good symposium they may do-able.

AXONOMIC INTEREST

cids won the award for the most popular family of abirds, followed by Procellariidae, Larinae, Phalacrocoracidae, and Sterninae. Clearly as an organization we like the Charadriiformes best, followed by Procellariiformes, Pelecaniformes, and Spheniscidae. In summary, we are a group that likes North Temperate - Subarctic - to Arctic seabirds that forage underwater [alcids, procellariids, phalacrocoracids]. The relatively poor showing for the rest of the Pelecaniformes reflects their more tropical distribution. Although unquestionably there are members who are only interested in tropical seabirds, for the most part the members of PSG prefer colder water (this can also be seen by the fact that more members are interested in penguins then tropicbirds and frigatebirds).

Write-in candidates included, in decreasing popularity, "shorebirds" (all other charadriiforms), waterfowl (Anatidae), Gaviidae, Falconiformes, Podicipedidae, Ardeidae, and *Anhinga*. One person responded that they have a "nonspecific" taxonomic interest, and another person likes some taxon called "General."

OCCUPATION

We are, and have been, an organization composed of government employees, university professors and graduate students, and private contractors. However, the number of private contractors or people working for private organizations has dramatically increased over the years. In addition, there are no undergraduate students in our current membership, while 78 of the 235 responders currently work in universities as professors or graduate student. Clearly if we want to increase our membership, undergraduate students are an untapped resource (and at $15.00 per year, PSG is affordable).

The trends in occupations of our current membership are revealing. The increase in private contractors and people working for private organizations, appears to be the result of a shift in the occupation of established PSG members, rather than a recent recruitment of new members. Many former Federal Government employees and graduate students have moved into the private sector rather than into government or university positions. This is less true for university professors, most of whom remained university professors, or retired and became "others." Graduate students equally become federal government employees, university professors or staff, private contractors/organizations, or older (emeritus?) graduate students.

What this section of the survey shows is that a portion of the PSG membership (government employees and graduate students) is flexible in their occupation goals. It also means that it is through graduate students (and current private contractors) that we have our best chance of

getting ourselves known in alternate (non-government or university) settings. Again, one way to increase our membership is to increase the number of undergraduate and graduate student in our ranks, and encourage these students to become more involved in PSG.

AREAS OF INTEREST

The membership of PSG is interested in ecological research and conservation biology of seabirds. Responders averaged almost two research categories per response (1.75 per response), while conservation biology, conservation advocacy, and management/administration averaged 0.66, 0.34, and 0.24 per response, respectively. Among the research categories, ecological research was only slightly less popular than all other research responses combined. Behavior and biogeographic research were of roughly equal interest to PSG members, while systematic/organismal research (including physiology) had the lowest response rate of any area of interest. That is, more members are interested in management and administrative duties than they are in conducting systematic and/or organismal research on seabirds. Clearly, the research conducted by the membership of PSG is applied and not theoretical research.

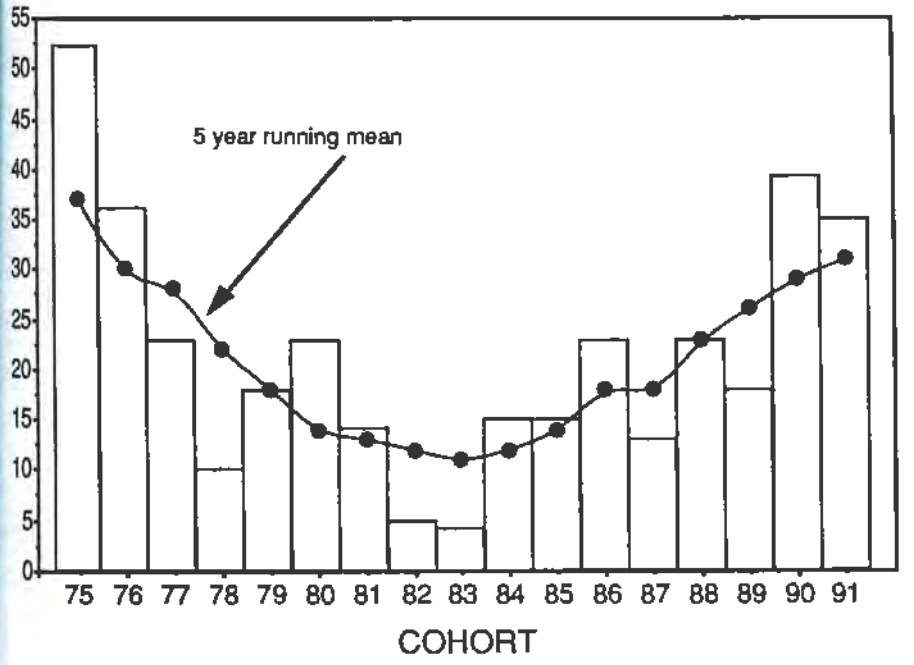
Within conservation biology, Marbled Murrelets, Exxon Oil Spill related biology, and "other", received 24%, 22%, and 16% responses, respectively. Besides the conservation biology of Marbled Murrelets and that related to the Exxon oil spill, the conservation biology of eiders, Brown Pelicans, Least Terns, Clapper Rails, storm-petrels, and Red-legged Kittiwakes were also mentioned. General topics of conservation biology listed by members included: gillnet, avian predator removal, oil spills, endangered species, fisheries interaction, plastic ingestion, DDT (mentioned as a former interest), diseases, benthic habitat restoration, toxic chemicals, and light attraction during migration. The conservation of the Gulf of California and arctic habitats were also mentioned as important regions for conservation.

Some trends in our areas of interest are instructive. Because each response averaged fewer areas of interest in the past (when first joined PSG category) than in the present, all areas of interest had lower percentages in the "First Joined PSG" category than in the "Current" category. Although the research categories ranged between 5 and 9 percentage points less in the past than in the present, Conservation Biology stood at 19 percentage points less in the past than in the present (advocacy and management were intermediate). I interpret this result to indicate that despite a relatively constant level of interest in research, members are much more interested in conservation biology (and to a lesser degree advocacy and management) now than they were when they first joined PSG. The increase in interest of conservation biology is clearly seen for current university professors. While ecological research has remained a relatively constant area of interest for current university professors (81% and 89%, past and present respectively), interest in conservation biology increases from 40% in the past to a current level of 56%. A similar pattern exists for graduate students. For members that first joined PSG as graduate students, 93% expressed interest in ecological research and 48% expressed interest in conservation biology when they first joined PSG. While ecological research remains the most important aspects of current graduate students' curriculum (96%), 70% of the respondents included conservation as an area of interest. Therefore, while ecological research remained relatively constant for graduate students, interest in conservation biology increased from 48% to 70%.

COHORT TRENDS

The following table and graph summarize the demographics of PSG in terms of "age-class" structure (years in which current members joined the society).

YEAR	#	RANK
1975	14	1
1976	10	3
1977	6	5
1978	3	15
1979	5	9
1980	6	5
1981	4	13
1982	1	16
1983	1	17
1984	4	11
1985	4	11
1986	6	5
1987	4	14
1988	6	5
1989	5	9
1990	11	2
1991	10	4



According to the above table and graph, PSG is erally represented by older and younger cohorts. That is, current membership either joined in the late seventies or eighties / early nineties. 1982 and 1983 were our worst rs for recruitment (or, the people that joined in these rs quit the organization prior to 1990), with 1978 and 1 not far behind. Thereafter we have had increasing mbership, except for 1987 - a very strange year.

The geographic distribution of the cohorts does not eal any striking pattern, with the exception that most of recruiting is from Central California to British Colum-/Washington State (with a few good years in Alaska and thern California; and one good year in the Pacific). 1975 1990 ranked 1 and 2 in cohort size; however, the current graphic distribution of the 1975 cohort is more wide-ead than that of 1990. In fact, nearly 50 percent of the 90 cohort lives in British Columbia / Washington State, hich suggests to me that we should focus on this region for w members.

Our preference for the Alcidae, Procellariidae, and alacrocoracidae (in that order) can also be seen in the nomic interests for each cohort. Because of the high ofile of Marbled Murrelets in the late 80's, I was expect-g an increase in the percentage of people who were erested in the Alcidae among the younger cohorts. This not occur because our interest in the Alcidae was always gh. In fact, 1987 was the only year in which the Alcidae not have the highest or second highest percentage. Strangely, the Sulidae took second prize that year, behind the Procellariidae. What's even more strange is that the geographic distribution of this cohort is generally in areas where there are no Recent sulids (Alaska, Central California, Great Lakes, and Southern California). In addition to the alcids, procellariids, and cormorants, there was also a moderate amount of interest for the Laridae, but this occurred only in the 1977, 1980, and 1991 cohorts.

One point of interest is that in a very rough sense, our recruitment is somewhat tied to our interest in the Alcidae. In our worst recruitment years, those people that did join do not appear to have an overwhelming interest in alcids. If you pool together our seven worst years (1978, 1981-1985, 1987), and compare percentages with our 10 best years, you get the following results:

	Good Years	Bad Years
Procellariidae	57%	81%
Alcidae	72%	62%

By maintaining the Alcidae as a high profile taxon either in research or conservation (e.g., Marbled Murrelets), we may stand a better chance of recruiting more members than if we switch our collective focus to procellariids or have a symposium (investing lots of time and money) on the status and conservation of cormorants. That is not to say that these taxa are not interesting, or we should not have a symposium on cormorants. But if there were no funds to do research on alcids, and Marbled Murrelets were no longer a hot research/conservation/political subject, we may experience a decline in recruitment or even a decline in membership. That's a guess.

There are no surprises in the occupations of specific cohorts. Generally, university or college professors and federal employees dominate most cohorts, followed closely be private sector people and graduate students. However, there is a marked difference in the distribution of these occupations among cohorts. The older cohorts are generally divided among federal workers, professors, and the

private sector, while graduate students are very strong among the younger cohorts. The pattern seems to suggest that the increase in PSG's recruitment in the late 80's and early 90's was due to the increase in graduate student membership. Although we would not normally expect graduate students to be well represented in the older cohorts, there is no dramatic increase in the number of professors and federal workers from the older to the younger cohorts. However, there is a general increase in the number of private sector employees, as well as the increase in the number of graduate students. Once again, these data indicate that graduate students are perhaps our best resource because they may be effective in recruiting more graduate students, or upon graduation and employment, recruiting other federal or state employees, professors, or perhaps more importantly, recruiting private sector employees.

As discussed above, our membership is most interested in ecological research, followed closely by interest in conservation biology. However, the difference between these two interests is more pronounced among the older cohorts than the younger cohorts. Interest in conservation biology was more popular than ecological research (although probably not significantly different) in the 1989 and 1990 cohorts. Combining this information with that in the previous paragraph suggests that the increase in membership during the late 80's was due to an increase in graduate student and private sector employees with interests in both research and conservation biology. This may be due to a realization among students that they stand a better chance of getting a job if their research has a conservation bent to it. Interest in Marbled Murrelets is well balanced between older and younger cohorts (with a slight bias toward younger cohorts), while interest in the Exxon Oil Spill and other conservation biology topics is more biased toward the younger cohorts. Again, 1987 is different from the other cohorts in showing well balanced interests, but favoring mostly ecological research and conservation advocacy. Apparently, the mission of this cohort is to advocate the conservation of sulids in the Pacific Northwest. This may explain why it is among our worst recruitment years.

(See page 13 for summary sheet of actual totals.)

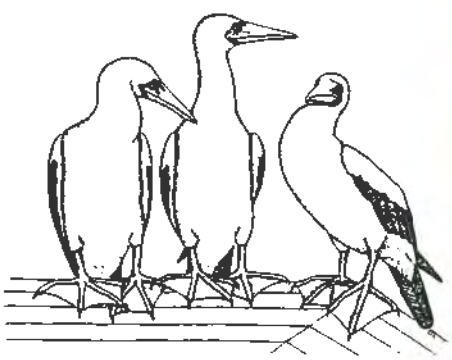
Twentieth Annual Meeting

The 1993 Annual Meeting will be held in Seattle, Washington from 9-13 February and will celebrate PSG's twentieth anniversary. Lora Leschner is chair of the local committee. PSG members who live in the Pacific Northwest and would like to help with meeting arrangements and other activities should write or call Lora.

Lora Leschner
Washington Dept. of Fish and Game
16018 Mill Creed Blvd.
Mill Creek, WA 98102

Phone: 206-774-8812

Two meetings will be held the day before the annual meeting begins—PSG's Marbled Murrelet Technical Committee Meeting and a meeting on Seabird Data Bases, jointly sponsored by Minerals Management Service and the U. S. Fish and Wildlife Service. Kim Nelson is in charge of the Marbled Murrelet Technical Committte Meeting and Palmer Sekora is in charge of the Seabird Data Base Meeting. Both meetings will be held at the Westin Hotel in downtown Seattle.



MMARY SHEET - Running Totals (counts) for all Fields

al Number of Responses 236

Total N for category:	236	151	236

GRAPHIC (see footnotes for explanation)	Current	Past①	Meeting②
	54	41	44
Columbia / Washington State	59	25	21
- Northern California	29	25	21
California	62	41	27
m California	37	19	31
/Latin America	8	8	57
(Hawaii, South Pacific, Asia)	27	11	59
Lakes (US & Canada boarding lakes)	20	9	95
(and all other regions)	17	15	88
ast (Maritime Canada, N. England, Eur.)	28	12	86
ast (States south of CT; includes Africa)	25	18	99

regions where you lived in the past (while being a PSG member).
se list in chronological order with 1 = oldest address (i.e., address
n first joined PSG).
regions where you would NOT attend an annual meeting. More
one region is acceptable. CROSS OUT ALL REGIONS IF YOU
VE NO INTEREST IN ATTENDING ANY ANNUAL MEETING.

225

TAXONOMIC INTEREST
Number from 1 to 5 the five groups in which you are most interested (1 = most interested). Interest can include research, management, or conservation

Spheniscidae	40	
Diomedeidae	70	
Procellariidae	140	2
Oceanitidae	61	
Phaethontidae	31	
Fregatidae	30	
Pelecanidae	55	
Sulidae	69	
Phalacrocoracidae	100	4
Chionidinae	15	
Stercorariinae	33	
Larinae	124	3
Sterninae	93	5
Alcidae	156	1
Other ( )	36	

Total N for category:	235	222

CUPATION:	Current	First Joined PSG
ral Government Employee	58	65
/Local Govern. Employee	19	9
versity Professor or Staff	55	43
eum Curator or Staff	18	8
duate / Postdoctoral Student	23	54
ergraduate Student	0	12
ate Contractor / organization	44	19
cator (e.g., H.S. Teacher)	3	0
servation Organization	14	11
r (Specify:)	29	10

Total N for category:	233	187

AREAS OF INTEREST (if more than one, number in order of preference with 1 = most important)	Current	First Joined PSG
Ecological Research	190	142
Behavioral Research	89	61
Biogeographic Research	80	46
Systematic/Organismal Research	49	22
Conservation Biology	153	87
Marbled Murrelets	36	15
Exxon Oil Spill	33	7
Other (Specify:)	25	11
Conservation Advocacy	80	39
Management / Administration	55	23

irections or goals PSG should move toward over the next 10 years (use additional sheets if necessary)

Conservation	89	
Research	54	
Communication - General	43	87
Communication - Bulletin	14	
Communication - Journal	20	
Communication - Annual Meeting	10	
Membership	17	
Colonial Waterbird Society	7	
Realignment of Regions	4	
Total N for category:	136	

IN MEMORIAM
JOHN L. SINCOCK (1929-1991)

John Sincock (right) and Vern Byrd with Newell's Shearwater

With deep regret, we note the passing of JohnL. Sincock, who died suddenly of a heart attack at his home in Pennsylvania on December 20, 1991. John was a member of the Pacific Seabird Group for many years before his retirement from the Fish & Wildlife Service (FWS) in 1984. John received his undergraduate (1952) and M.S. degrees in Zoology (1953) at Pennsylvania State University. He began his career with FWS in 1957 as a Wildlife Research Biologist-pilot and became Chief of Wetlands Ecology in 1962. In 1967, John moved to Hawaii as Endangered Species Program Biologist, Kauai Field Station (a branch of the Patuxent Wildlife Research Center) where he remained until his retirement.

Among seabird biologists, John will be remembered for rediscovering the nesting grounds of the Newell's Shearwater on Kauai in July 1967, a species that was thought to be extinct at mid-century. When a pig hunter's dogs returned from a hunt in the Anahola Mountains with black and white feathers in their mouths, John immediately recognized the remnants of a Newell's Shearwater. John and Gerald Swedberg commandeered a helicopter and flew to a knife-like ridge in Kauai's mountains where dense, impenetrable stands of fern prevented a landing. Undeterred, they jumped to the ground, cut a trail and found Newell's Shearwaters and their nests.

John participated in research to mitigate the loss of Newell's Shearwaters caused by light attraction in urban areas of Kauai. He worked with Vernon Byrd on cross-fostering experiments in an attempt to persuade Newell's shearwaters to breed in wedge-tailed shearwater burrows at the Kilauea Point National Wildlife Refuge. John served as a member of Endangered Species Act recovery teams for Newell's Shearwaters and Dark-rumped Petrels and participated in annual seabird surveys in the Northwestern Hawaiian Islands for a dozen years. John probably knew more about the endangered Harcourt's Storm-petrel in Hawaii than anyone, but his diligent search to find the first nest was unrewarded.

Co-organizer of the 1976-81 Hawaiian forest bird survey of all the main Hawaiian Islands, John pioneered work on endangered forest birds, particularly on Kauai. He often worked alone for weeks in the remote Alakai Wilderness Preserve, having located and studied the critically rare Kauai 'O'o'a'a, 'O'u, Kama'o, Puaiohi, and Nukupu'u and 'Akialoa.

An individual of the highest personal and professional integrity, John was an amicable, hospitable fellow biologist who will be sorely missed by his colleagues and friends who shared his love for the natural environment, especially those who suffered arduous beach landings in the Northwestern Hawaiian Islands, slippery wet nights with head lamps in shearwater colonies, or the rain-soaked meager existence of forest bird field work in the windblown tents of the Alakai.

John is survived by his wife Renate, daughter Cindy, three stepsons and one step daughter.

Craig S. Harrison, J. Michael Scott, Tom C. Telfer

Alaska

The names of various institutions are abbreviated in this report as follows: Alaska Maritime National Wildlife Refuge (AMNWR), the U.S. Fish and Wildlife Migratory Bird Management unit (MBM), the Alaska Fish and Wildlife Research Center (AFWRC), the University of Alaska (UAF), and University of Washington (UW).

Colony studies took place throughout the state in 1991. **Murre and Black-legged kittiwake** populations and productivity were monitored for the tenth season at Cape Thompson (Chukchi Sea), for the seventeenth season at Bluff (Norton Sound), and during an abbreviated season on St. Matthew Island (Bering Sea). These species, as well as **Least and Crested Auklets,** were also monitored on Little Diomede Island (Bering Strait). These studies, jointly funded by the U.S. Fish and Wildlife Service and Minerals Management Service, were coordinated by **Vivian Mendenhall** and **Dave Irons** (MBM); field leaders were **Mike Nishimoto** (AMNWR), **Ed Murphy** (UAF), **Art Sowls** (AMNWR), and **Dave Irons/Ada Fowler** (MBM).

The studies at Little Diomede Island were unique in two respects: land-based plots were established for estimating murre, kittiwake and auklet populations and productivity for the first time, and Russian scientists were involved in several of the studies. The FWS team on shore (MBM) was assisted by **Victor Zubakin** and **Nikolai Konukhov** in efforts to census auklets; these two also were refining a method to more accurately estimate auklet populations while FWS censused the island's murre and kittiwake populations, and those of Fairway Rock, by boat. The FWS vessel "Tiglax" arrived in July with **Alexander Kitaiskiy, Alexy Pinchuk, Alexander Kondratiev,** and **Eugene Panov.** The latter two accompanied Zubakin and Konukhov to adjacent Big Diomede Island where a census of that island's seabird populations was carried out. Meanwhile Kitaiskiy and Pinchuk assisted **John Piatt** (AFWRC) and other FWS personnel with an extensive series of pelagic transects that included seabird censuses, temperature-salinity, and plankton tow/hydroacoustic scans to determine prey abundance, in both U.S. and Russian waters.

Scott Hatch (AFWRC) continued his investigation of **Black-legged Kittiwake** winter survival, mortality factors, energetics and productivity at Middleton Island in the Gulf of Alaska, where this species suffered a probable food related die-off this year. Also at Middleton, **Brian Fadely** (AFWRC) studied cormorant, kittiwake and gull foraging habits and nestling diets. **Dee Boersma** (UW) monitored storm-petrel and puffin populations on the Barren Islands (Gulf of Alaska), especially food limitation of nestling growth using food supplement experiments. **Dave Nysewander** (AMNWR) continued *Exxon-Valdez* oil spill damage assessment studies, emphasizing murre population trends and productivity, at the Barren, Chiswell, and Semidi Islands (Gulf of Alaska). **Dave Irons** (MBM) continued his studies of kittiwake reproductive success, including foraging sites and brood reduction, in Prince William Sound. Also in the Sound, **Greg Golet** (UC-Santa Cruz) initiated a Master's project concerning kittiwake reproductive energetics. **Vern Byrd** (AMNWR) continued monitoring kittiwake and murre population trends and productivity on Agattu and Buldir Islands (Aleutians), productivity of four auklet species on Buldir, and nesting distribution and density of **Tufted Puffins** on Buldir in relation to the 1988 high seas gillnet ban. **Lisa Haggblom** (Togiak NWR) monitored kittiwake, murre, and cormorant population trends, productivity and food habits at Cape Peirce and vicinity (Bristol Bay). **Art Sowls** and **Laurie Fairchild** (AMNWR) continued monitoring murre and kittiwake population trends and productivity at St. George Island (Pribilof Is.), and began a program of banding **Red-legged Kittiwakes.** In view of evidence for high predation rates at several Alaskan colonies, **Ed Murphy** (UAF) began a project to quantify raven and gull predation of murre eggs and nestlings at Bluff.

Other studies in 1991 included pelagic work at Little Diomede by **John Piatt** (AFWRC). Piatt also coordinated a multi-agency at-sea survey of **Marbled** and **Kittlitz's Murrelets** in southeast Alaska, and continued studies of puffin diets in the western Gulf of Alaska and eastern Aleutians, including hydroacoustic surveys for prey distribution. As part of an *Exxon-Valdez* oil spill restoration study, **Kathy Kuletz** (MBM) headed an effort to find **Marbled Murrelet** nests and evaluate habitat in Prince William Sound—four nests were discovered. **Steve Klosiewski** (MBM) converted the Alaska Seabird Colony Catalog and the Pelagic Seabird Database to PC format. **Ed Bailey** (AMNWR) continued the fox removal project on several islands of the Andreanof, Delarof and Four Mountains island groups in the central Aleutians; counts on islands previously cleared indicate some recovery has taken place. **Chris Dau** (Izembek NWR) initiated studies of the declining **Steller's Eider** seasonal distribution and abundance on the Alaska Peninsula. **Dirk Derksen** and **Dave Ward** continued studies of migration patterns and winter distribution in Mexico of **Black Brant** banded in Canada, Alaska and on Wrangel Island.

The Fourth Alaska Bird Conference and Workshop, sponsored by the U.S. Fish and Wildlife Service, took place in Anchorage 19-22 November, 1991. The scientific committee was chaired jointly by **Dirk Derksen** and **Bob Gill** (AFWRC). Following a plenary session focussing on shared avian resources of Beringia (a substantial contingent of Russians was able to attend), where topics included status, biogeography, ecology, and evolution of waterfowl, shorebirds, seabirds, raptors and passerines; specific ses-

sions were devoted to research in these groups. The seabird ecology session included papers on fulmar ecology, theory of molt, puffin populations and productivity, auklet attendance patterns, and breeding in murres. A session on seabird populations included papers on detecting inpact-related changes, auklet nesting strategies, and monitoring murre and kittiwake populations at several colonies in the Bering and Chukchi Seas. Several papers in waterfowl ecology and shorebird ecology sessions dealt with use of the marine environment.

Minerals Management Service held an Information Transfer Meeting in Anchorage, 28-30 January, 1992. A seabird session included papers on relation of puffins to forage fish in the Gulf of Alaska, kittiwake survival on Middleton Island, mapping pelagic seabird distributions, variation in Bering and Chukchi Sea seabird colonies, Alaska seabird colony databases, Bering Sea winter/spring seabird populations, and seabird ecology in Unimak Pass. Since most information is classified as litigation sensitive, speakers in a session on *Exxon-Valdez* oil spill impacts were able to discuss study results only in rather general terms. It is rumored that specific results may be released this summer.

A variety of studies will take place throughout the state during the 1992 field season. **Art Sowls, Lisa Climo,** and **Belinda Dragoo** (AMNWR) will be monitoring murre and kittiwake populations in the Pribilof Islands and color banding kittiwakes for a survival study. In July, Art will move on to Cape Lisburne (Chukchi Sea) for additional murre and kittiwake monitoring. **Vern Byrd** (AMNWR) will have monitoring projects underway primarily at Buldir Island in the western Aleutians (storm-petrels, kittiwake, murres, **Tufted Puffins,** auklets); however, Vern's main effort will be in supervising *Exxon-Valdez* oil spill damage assessment studies and restoration projects with **Don Dragoo** (AMNWR), principally in the Barren Islands and Puale Bay in the western Gulf of Alaska. As a result of funding cuts, **Ed Bailey's** (AMNWR) fox eradication efforts will be severely curtailed, possibly limited to Ugamak Island in Unimak Pass. Many seabird researchers feel this is an unfortunate situation since removal of introduced predators is an extremely effective means of returning seabird populations to their former numbers.

Scott Hatch (AFWRC) will continue his study of kittiwake survival on Middleton Island (northern Gulf of Alaska) and begin a similar study of the **Pelagic Cormorant** population. Murre, kittiwake, and cormorant monitoring data also will be collected on Middleton. Scott and **John Piatt** (AFWRC) will continue investigating puffin diets with land-based studies on Aiktak Island, the Semidi Islands, and Sandman Reefs in the eastern Aleutian/Alaska Peninsula area, and pelagic sampling, oceanographic and hydro-acoustic studies of forage fish from the FWS vessel Tiglax. Scott and John also will undertake a short cruise as part of a joint FWS/Minerals Management Service (MM project, gathering similar pelagic data in the vicinity o Barren Islands. In addition, Scott will travel to Mag Siberia and accompany **Alexander Kondratiev** to co auklets on Talen Island, and John will be censusing Mar **Murrelets** in southeast Alaska in cooperation with the Forest Service. **Ed Murphy** (UAF) will be investig raven predation on murre eggs at Bluff (Norton Sound) summer, as well as the effects of aircraft disturban murres and kittiwakes on St. George Island in the Prib **Vivian Mendenhall** (MBM) will coordinate the F MMS monitoring program which will support team Little Diomede Island for the second year, and at C Lisburne. Vivian also will be working with the Ala Catalog of Seabird Colonies, now available for both PC Macintosh, which can provide detailed maps of any A kan colony area. Russian colony information is being ad and Vivian would be interested in any Alaskan informa researchers feel may not have been entered into the d base. **Kathy Kuletz** and **Nancy Naslund** will be moni ing **Marbled Murrelet** activities and conducting r searches in Prince William Sound while **Greg Golet** a **Dave Irons** will continue kittiwake studies. **George Div** (UAF) will return to Cooper Island to monitor his Bla **Guillemot** colony. This year will be George's eighte field season; he is currently working on a Ph.D. O researchers from UAF include Amy Schauer, who is wo ing on her doctoral dissertation on the foraging ecology pelagic seabirds in the Bering Sea., and graduate stud **Suzann Speckman,** who, under the guidance of A **Springer**, is beginning a study of **Marbled Murrelets** Auke Bay.

Joel Hubba

The Pacific Seabird Group notes with nostalgic regret the closing of the Anchorage OCSEAP office. The office first opened in Juneau in 1974 and, along with the Arctic OCSEAP office in Fairbanks (1974-83), directed baseline research in areas being considered for oil development.

The influence of OCSEAP on Alaskan seabird research and on the Pacific Seabird Group was major. OCSEAP funding in the late 1970s launched seabird research in Alaska and the careers of many seabird biologists and PSG members. Studies initiated in the early days of OCSEAP continue to influence the course of seabird research. Many of the researchers who began their careers with funding from OCSEAP are now as gray as the literature they produced.

GJD

Washington / British Columbia

n Burger and **Irene Manley** of the University of Victoria conducting research on the nesting behavior of **Marbled** rrelets on southern Vancouver Island. They will be nitoring behavior and flight activities and searching for ts in the Carmanah Valley and adjacent watersheds, and rking with Parks Canda on pelagic surveys in Pacific n National Park. Burger is also involved in studies using e-at-depth recorders to look at diving depths in Rhinoc- s **Auklets, Cassin's Auklets,** and other alcids, and dies of the persistence of seabird carcasses on beaches the buoyancy of oiled seabirds. This work, which uld improve assessments of mortality following oil lls, is a follow-up study of the *Nestucca* oil spill of 1988- Burger is also working with the British Columbia nistry of Environment on systematic beached bird sur- s at over 35 sites in British Columbia.

Kees Vermeer of the Canadian Wildlife Service nducted studies of **Pigeon Guillemot** colony attendance l breeding biology in British Columbia in 1991.

Mary Mahaffey (USFWS Olympia) is develop- a project as as part of the Puget Sound Ambient Moni- ring Program that will measure pollutants in the tissues of geon **Guillemots** and possibly **Surf Scoters.**

The National Marine Fisheries Service has con- cted with the Washington State Department of Wildlife d the Oregon State Department of Fish and Game to study abird and marine mammal mortality related to the Colum- River gill net fishery. **Steve Jeffries** is the project leader Washington.

Ulrich Wilson (USFWS) of the Nisqually Refuge ll be conducting breeding bird surveys of seabird colonies the outer coast of Washington as well in the Strait of Juan Fuca on Protection and Smith Islands. Ulrich will also be nducting a **Brown Pelican** survey of the outer coast in Washington beginning in October. Ulrich wil census brant d other waterfowl in the Strait of Juan de Fuca. USFWS ologist **Mike McMinn** will be surveying the San Juan lands for breeding seabirds.

The **Laskeek Bay Conservation Society** is coop- rating with **Tony Gaston** of the Canadian Wildlife Service monitor population trends in the marine birds of the ueen Charlotte Islands; especially **Ancient Murrelets, assin's Auklets,** and **Black Oystercatchers.** They are rking on developing methods of population monitoring at minimize disturbance to breeding birds as well as on veloping a program of conservation education. A sum- er field station is maintained by volunteers. Those want- g more information or desiring to assist the society should ntact the Laskeek Bay Conservation Society, Box 867, ueen Charlotte City, BC V0T 1S0.

Terry Wahl (Bellingham, WA) continues to gather and analyze data on interannual variation in seabird occurrence off the Washington coast. This will be the 21st year of pelagic surveys. Fall migration trips are conducted almost every weekend from mid-July to mid-October and anyone wanting to make a reservation for one of the charters ($59 per person) should contact Terry at 206-733-8255. **Jean Cross** (Monroe, WA) has completed her surveys near Mt. Pilchuk, in eastern Puget Sound, on the patterns of **Marbled Murrelet** occurrence in nesting areas during the nonbreeding season. A report has been submitted to the Washington Department of Game.

The area west of Washington's Olympic Peninsula was the scene of a major oil spill this past summer when the 610-foot Chinese freighter, *Tuo Hai* collided with the 365-foot Japanese factory ship, *Tenyo Maru.* The two vessels were maneuvering in fog-enshrouded waters at the western end of the Strait of Juan de Fuca on 22 June when the Chinese vessel failed to respond to radio messages from the Canadian Coast Guard and rammed the fish processor. The *Tenyo Maru*'s hull was ruptured and the vessel sank almost immediately in 500 feet of water 22 miles northwest of Cape Flattery, the northwestern tip of the Olympic Peninsula. An estimated 350,000 gallons of diesel and fuel oil were on the ship and over the next five weeks the oil escaped from the submerged vessel creating an oil slick that extended as far south as Oregon. Half of the beaches on the Olympic National Park were oiled and a number of them were closed to the public. At one time the spill threatened the spring shorebird staging areas on the southern Washington coast.

The spill occurred at a time when **Common Murre** chicks were fledging from Washington colonies and murres from Oregon were moving north into Washington waters. Of the 4300 birds recovered in the wake of the spill, 3100 were murres and 900 of those were young of the year. Local television crews were able to obtain mesmerizing videotape of oiled murre chicks sitting on the beach attended by parents attempting to entice them into the water. Even before the spill, the decreasing number of murres breeding in the state was cause for concern. Washington's breeding murre population has declined from over 30,000 in the early 1980s to a current estimate of 4000 individuals.

The Strait of Juan de Fuca has extensive fishing vessel and freighter traffic and the incident in the summer of 1991 demonstrates that major oiling of marine habitats can occur even in the absence of oil transport vessels. Much of the area affected by the spill is being considered for inclusion in the proposed Olympic Coast Marine Sanctuary. NOAA has conducted hearings on boundary and regulatory alternatives for the sanctuary. The largest boundary alternative would enclose 4400 square nautical miles and extend from the Canadian border to the Columbia River. The government's preferred regulatory alternative would prohibit oil, gas, and mineral exploration, development, and

production until the year 2000 when the prohibition could be modified or removed. Another regulatory alternative would require vessel and barge traffic be routed outside the sanctuary boundaries with the exception of double-hulled vessels. However, even double-hulled vessels would not have prevented the type of incident that occurred this past summer.

George Divoky

1993 Annual Meeting!

The 1993 Annual Meeting will be held in Seattle from 9-13 February and will celebrate PSG's twentieth anniversary. Lora Leschner is chair of the local committee. PSG members who live in the Seattle area and would like to help with meeting arrangements and other activities should write or call Lora.

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Oregon/Northern California

Jan Hodder and students at the Oregon Institute Marine Biology will continue studying nesting success **Pelagic Cormorants** at the OIMB colony (CC#270-00 Sunset Bay. This will be the 20th consecutive year that t colony has been studied.

Kathy Merrifield of Oregon State University conducting weekly seawatches near Yachats, Oregon document numbers and flight directions for all species birds observed. Kathy has also been studying the spec composition of gull flocks at several sites in Lincoln Coun Oregon.

Michael Fry of the University of California Davis is the principal investigator in a study to determi organic contaminant levels in seabirds along the Pacif coast of Washington, Oregon, and California. As part of thi study, eggs from nests of **Double-crested Cormorants Western Gulls, Leach's Storm-Petrels,** and **Pigeon Guil lemots** will be collected in Oregon for analysis.

Roy W. Lowe of the Oregon Coastal Refuge Office, USFWS is continuing seabird monitoring projects in Oregon. Activities in 1992 will include aerial photographic surveys of all **Common Murre** and **Brandt's** and **Double-crested Cormorant** colonies on the Oregon coast. Colony census of most species will be done at select locations, and the beached bird mortality transects study near Newport will be continued. The sixth annual aerial survey of **Brown Pelicans** along the Oregon and Washington coasts will be conducted in mid-September during the peak use period. Spring and fall aerial surveys of Aleutian **Canada Goose** use of Oregon coastal rocks will also be continued.

The **Portland Field Office** is continuing an investigation into the accumulation of organic contaminants, particularly DDE, polychlorinated biphenyls, and dioxins in Columbia River fish and wildlife. There is concern that these contaminants may be magnified through the food chain, possibly affecting upper trophic level species, including fish-eating birds. During the past two years, birds eggs, including those of **Western Gulls, Ring-billed Gulls, Double-crested Cormorants, Forester's Terns** and **Caspian Terns** were collected for analysis from colonies at Cathlamet and Baker Bays and Umatilla National Wildlife Refuge. Reproductive success of **Double-crested Cormorants** and **Western Gulls** is being evaluated for colonies nesting in the lower Columbia River for comparison with productivity of colonies in the upper river. Field work is now complete and the researchers are awaiting the results of

emical analyses. This summer will be spent evaluating a and writing reports. Contact **Carol Shuler** or **Elizabeth Materna** (503) 231-6179.

Reproductive biology of **Leach's Storm-Petrels** Saddle Rock, Oregon Islands National Wildlife Refuge ll be the focus of a continuing long-term study conducted **Robert L. Pitman**. Pitman began banding of storm-rels on Saddle Rock in 1979 and has continued annually. date a total of 5,472 birds have been banded, including 25 adults, 2,725 Chicks and 122 recaptures. Food habits rmation is currently being analyzed.

Range Bayer is currently analyzing seawatch data collected in the early 1980s and **Robert Loeffel** is ntinuing his long-term beached bird mortality study south Newport, Oregon. This study is now in the 15th year.

Tillamook Lighthouse Rock is one of the very few cks in Oregon that is not within Oregon Islands National ildlife Refuge (NWR). When the rock was abandoned as active lighthouse by the U.S. Coast Guard in 1957, it was nsidered excess property of the government and was sold a private individual. Ownership of the lighthouse changed nds several times over a 20-year period, but the facility s left to deteriorate and it was during this period that abirds began to reclaim this rock as a breeding colony. rrently, the lighthouse and rock is owned by a corporation known as Eternity At Sea and is operated as a commercial columbarium. To date, urns containing the cremated mains of only about a dozen humans have been placed in e lighthouse but plans are to ultimately place the remains over 300,000 people there. Recent photographic surveys the seabird colony at the rock indicate that about 400 randt's **Cormorants** and more than 8,000 **Common** urres nest there, or about twice as many murres as breed all of Washington!

Because Tillamook Lighthouse Rock is now an portant seabird breeding colony, the U.S. Fish and Wildife Service (USFWS) has initiated efforts to include this ck within Oregon islands National Wildlife Refuge. The wners of the rock were approached but were not interested selling because of the investments they have made and ecause of the economic gain they expect to realize. However, since the owners are conservationists they liked the ea of placing the rock under the protection of the refuge, nd they felt this would also be a selling point to potential ients.

It appears now that Tillamook Lighthouse and ck will become part of Oregon Islands NWR under terms a conservation easement currently being finalized. Within e terms of the easement, Eternity At Sea will retain ownership of the rock and operate the facility as a columbarium. They also will fund and perform all maintenance and preservation of the historic structures on the rock, and they have agreed that no one will be allowed on the rock during the seabird nesting season between April and August. All work and placement of urns on the rock will be done during the September-March period. The USFWS will restrict access to the island, assist with any trespass problems, and continue to survey the nesting seabird populations there. The USFWS has also agreed to erect a high quality interpretative sign on the adjacent mainland in Ecola State Park that describes the history of Tillamook Lighthouse Rock, the importance of the rock to nesting seabirds, the private/government partnership in protecting the rock, and the current use of the rock. Oregon State Parks has agreed to maintain the sign. The USFWS will also assist the owners in seeking National Historic Landmark designation of this famous rock and lighthouse. The easement will be in perpetuity, and a $1.00 fee will be paid for the easement.

The USFWS is also in the process of attempting to add **Pirates Cove Rock** to Oregon Islands NWR by conservation easement. This small, privately owned rock located near Depoe Bay serves as a nesting colony for **Western Gulls, Pelagic Cormorants**, and **Black Oystercatchers**. The rock is separated from the mainland by a narrow surge channel that is barely passable at low tide. The owners, Holiday RV Park, want to protect the rock and put it within the refuge because they would like to reduce their property taxes and because tourists staying at their facility enjoy viewing the wildlife associated with the rock. The state currently classifies the rock as useable open space RV property and taxes them for it accordingly. In the past, fishermen trespassing on the rock have occasionally become stranded at high tide, requiring rescue by the U.S. Coast Guard. Once in the refuge, however, the rock will be posted closed and trespassers prosecuted. With the conservation easement in place the owners will be taxed at a much lower rate and will receive assistance in protecting the rock. USFWS will, in turn, be guaranteed that no development or human activity will be allowed on the rock which would disturb nesting seabirds. There will be a $1.00 fee for the easement.

During the past year, USFWS and the U.S. Coast Guard have been discussing the fate of **Cape Arago Lighthouse** on **Gregory Point Rock**. Oregon Coastal Refuges personnel learned from locals that the Coast Guard was considering locating a heliport on the rock to service the lighthouse. Apparently the footbridge to the rock has been condemned and will cost more than $500,000 to rebuild. There was immediate concern because the rock itself is an

active seabird nesting colony and is surrounded by other seabird nesting rocks that are within Oregon Islands NWR. Helicopter operations would affect nesting seabirds on all the rocks.

The USFWS suggested that the Coast Guard consider abandoning the rock and lighthouse and replace it with a small automated light on the adjacent mainland. Gregory Point Rock could then be transferred to the USFWS for inclusion in Oregon Islands NWR. The rock currently provides nesting habitat to eight species of seabirds totalling more than 1,300 birds and also serves as a major roost site for **Brown Pelicans**. There appears to be great potential for this colony to expand if human activities (Coast Guard) are eliminated from this small rock. The Coast Guard is now looking seriously at abandoning the lighthouse and rock, but complicating the matter is the fact that the rock would automatically revert to the Bureau of Land Management. The Bureau of Land Management and local Native American tribes are interested in building a huge visitor/interpretative center on the mainland adjacent to the rock and the State of Oregon has expressed interest in the lighthouse for public tours. How all of this will unfold is unknown.

On January 14, 1992, the U. S. Fish and Wildlife Service announced it was proposing to list the coastal population of the **Western Snowy Plover** as a threatened species, under the authority of the Endangered Species Act of 1973, as amended. In coastal Oregon, only 6 of 29 nesting sites remain, representing a 79% decline from historical conditions. Of the six remaining nesting sites, three support 81% of the birds. In addition to the decline in nesting sites there has been a decline in the number of birds nesting from and average of 90 adults present down to 57. At the current 6% average annual rate of decline, this species could totally disappear from Oregon's beaches in the next ten years.

Inclusion of the **Snowy Plover** on the Threatened and Endangered Species List will hopefully focus research, management, and funding on this beleaguered subpopulation. In order to prevent extirpation of this species from coastal Oregon, difficult management decisions will have to be made. This will likely necessitate closing some beaches to human use during the nesting season, which will be very unpopular with some user groups and government entities.

Roy W. Lowe

Central California

Mark Silberstein is working with **Richard Zimmerm** and **Randy Alberti**, Hopkins Marine Station, on a seagr restoration and biology project in the Elkhorn Slough N serve. The heron and egret rookery is in its eighth yea nesting, with over 40 pairs of **Great Blue Herons** a **Great Egrets**.

Silberstein reports that several publications h been completed by the Elkhorn Slough Ecological Reser and National Estuarine Research Reserve and can be o tained by sending a self-addressed stamped envelope to t following address: Elkhorn Slough Foundation, Post Offi Box 267, Moss Landing, California, 95039. These public tions include:

Checklist of the birds of Elkhorn Slough - 267 species.

Bernadette Ramer, Gary Page, and Mary Yoklavich "Seasonal abundance, habitat use, and diet of shorebirds Elkhorn Slough, California". *Western birds*, v. 22.

Mary Yaklovich, Marty Stevenson, and Gregor Caillet. 1992. Seasonal and spatial patterns of ichthyoplankton in Elkhorn Slough, California." *Estuarine, Coastal, and Shelf Science*,

Mary Yaklovich, Gregor Caillet, James Barry, David Ambrose, and Brooke Antrim. 1991. "Temporal and spatial patterns and abundance and diversity of fish assemblages in Elkhorn Slough, California." *Estuaries*, v. 14, no. 4.

Jack Feldman of San Francisco State University is completing his thesis on **Brandt's Cormorant** colony formation.

Burr Heneman has taken the positions of Director of the Pacific Region for the Center for Marine Conservation, at 312 Sutter Street, Sutie 606, San Francisco, California, 94108; phone number 415-391-6204.

Monterey Bay is the site of two seabird projects directed by **Jim Harvey** of the **Moss Landing Marine Laboratory.** Master's degree students will survey the distribution and abundance of seabirds along a set transect path and random transects over a period of 4-5 years. The students will relate the patterns of seabird abundance with small scale oceanographic features and prey abundance. The second project involves weekly surveys of beachcast

birds. Students will record the seasonal occurrence of ...ircast birds and relate this data to oceanographic data. ...ondarily they will look at causes of death as part of a ...g-term monitoring project for the upcoming Monterey ...Sanctuary.

Nancy Naslund continues her work on **Marbled** ...rrelets in the Santa Cruz Mountains and in Alaska. She ...rking on her thesis through the University of Califor... Santa Cruz.

Harry Ohlendorf works as an Environmental Sci... for CH2M HILL (3840 Rosin Court, Suite 110, ...ramento, CA 95834). He continues to specialize in ...life toxicology with a special interest in the effects of ...aminants on aquatic birds. He is also working on ...jects related to broader issues of wetlands, environmen... enhancement, and risk assessments.

Bill Sydeman has recently been named the Acting ...earch Director for the Farallon program for the Point ...s Bird Observatory. **Bill Sydeman, Peter Pyle,** and ...id Ainley of PRBO continue to monitor breeding sea... at the Farallon Islands NWR. They are doing demo...phic studies on **Western Gulls, Brandt's Cormorants,** ...ssin's **Auklets,** and **Common Murres** (reprints of two ...stern Gull studies and a **Cassin's Auklet** study are ...ently available). Sydeman, Pyle, and Ainley are also ...ducting a study on diet, foraging behavior, and repro...tive success in **Pigeon Guillemots** and **Rhinoceros** ...klets, as well as a study to determine whether **Western** ...ll interference or predation prohibits colony formation ... **Cassin's Auklets.** Winter attendance by **Common** ...rres and **Western Gulls** is being investigated. **David** ...ley, **Larry Spear,** and **Bill Sydeman** continue to inves...te pelagic distribution of seabirds in relation to prey in ...tral California, in conjunction with the National Marine ...heries Service. They are investigating the distribution of ...birds and marine mammals in the Gulf of the Farallones ...g GIS techniques. This 2-year EPA contract study will ...used to evaluate potential ocean dredge disposal sites.

Gary Page, Lynne Stenzel, Dave Shuford, and ...net Kjelmyr continue a shorebird ecology project, co...inating spring and fall shorebird surveys in coastal and ...rior wetlands of all states west of the Rocky Mountains. ...ff and research associates continue to monitor breeding ...cess and juvenile dispersal of **Snowy Plovers** along ...nterey Bay. They are also conducting winter population ...veys along the west coast, including Baja California ...te: any **Snowy Plover** sightings from Baja would be ...tefully received). **John and Ricky Warriner** and **Gary** ...ge are participating in a project to protect plover nests ...m mammalian (red fox) predation using predator exclosures (see under USFWS - SFBNWR).

In San Francisco Bay, **Gary Page, Lynne Stenzel, Dave Shuford,** and **Janet Kjelmyr** are investigating habitat use by shorebirds.

Jan Dierks, Gary Page, and **Dave Shuford** continue to study the population size and breeding success of **California Gulls** at Mono Lake.

In other areas, **David Ainley** and **Bill Fraser,** Old Dominion University of Virginia, are assessing the impacts of the oil spill resulting from the sinking of the Bahia Paraiso at Palmer Station, Antarctica. **David Ainley, Larry Spear,** and **Chris Ribic,** EPA in Corvallis, Oregon, continue studies of pelagic seabird communities in the eastern equatorial Pacific.

Mark Rauzon presented a paper at the annual PSG meeting in Oregon in January, describing the establishment of an artificial nesting platform for **Red-footed Boobies** at the Kaneohe Marine Corps Air Station in Oahu. He reports that Red-footed Boobys are now using that platform. A report of nesting success will be included in the next bulletin.

Steve and Stephanie Singer, of the Santa Cruz City Museum of Natural History, in cooperation with **David Suddjian,** organized the Santa Cruz Mountains Murrelet Group, a team of volunteers which found the first **Marbled Murrelet** nest in a Coast Redwood tree. The nest was unique in that it occurred on a branch lacking any moss or lichens and was located in the crotch formed where the branch joined the trunk. Later that summer, they became the first group to observe firsthand the fledging of a murrelet from a nest tree.

The nest was discovered in Big Basin Redwoods State Park near the date of egg-laying and was watched until fledging. To avoid attracting predators to the nest site, the tree was not climbed while the nest was active. On the night of July 3, 1991, 22 minutes after sunset, they observed the chick fledge from the nest. This was the first successful fledging to be documented in California, and it occurred despite the fact that the nest tree was located in an area of the park heavily utilized by visitors, and the nest location was known to the resident pair of **Stellar's Jays.** This summer the Santa Cruz Murrelet Group will continue to look for nests, but will also devote some effort to locating new forest sites that are being utilized by the murrelet.

Steve is also active in a second research program to identify, describe, and categorize the in-stand vocalizations of **Marbled Murrelets.** Last summer, researchers in Oregon (**Kim Nelson**), northern California (**Brian O'Donnell**), and Alaska (**Kathy Kuletz**) made tape recordings of murrelet vocalizations that Steve is analyzing and comparing with

his recordings of vocalizations from Big Basin State Park in California. Analysis of these calls and collateral data is ongoing and the results of this joint research effort will be presented in the near future.

Researchers at San Francisco Bay Bird Observatory continue to monitor colonial nesting birds in south San Francisco Bay. **Jan Dierks** recently completed her Master's thesis on chick diet of **California Gulls**. She is currently assisting SFBBO on colonial waterbird studies.

News from the USFWS/Northern Prairie Wildlife Research Center includes the announcement of an interim report that was completed on 1989-1990 seabird colony surveys in northern and central California by **Harry Carter, Deborah Jaques, Gerard McChesney, Craig Strong, Michael Parker**, and **Jean Takekawa**, with collaboration by Point Reyes Bird Observatory. The study was funded by the Minerals Management Service. This report will not be available for distribution. NWPRC conducted seabird colony surveys in 1991 throughout the Southern California Bight (including the Channel Islands and mainland bluffs) with funding from MMS (PI **Harry Carter**, plus **Gerry McChesney, Darrell Whitworth, David Lewis, Deborah Jory**, with collaboration by Channel Islands National Park (**Trudy Ingram**) and assistance from the California Institute of Environmental Studies (**Frank Gress**) and the U.S. Navy (**Tom Keeney**). Highlights included the reestablishment of nesting **Tufted Puffins** after 78 years, first time nesting of **Rhinoceros Auklets** in this region, and several new colonies of **Ashy Storm-Petrels, Brandt's** and **Pelagic Cormorants**, and **Pigeon Guillemots**. A draft report including new colony data for the whole state will be completed in the summer of 1992.

Harry Carter and **Gerry McChesney** are working with **Tom Keeney**, Point Mugu Naval Air Weapons Station Environmental Division, to develop a seabird monitoring program for **Brandt's Cormorants, Western Gulls**, and **Black Oystercatchers** on San Nicholas Island in southern California. **Deborah Jaques** and **Craig Strong** are also working with the Navy, studying the roosting behavior of **Brown Pelicans** at Point Mugu.

Sarah Griffin and **John Takekawa** are conducting a study of wintering shorebird use of San Francisco Bay, including the use of radiotelemetry on **Western Sandpipers**. Sarah Griffin is conducting this work as her Master's thesis through California State University, Hayward.

Tom Harvey of the USFWS/Ecological Services, Sacramento recently completed a report for the EPA Estuary Project, titled "Status and Trends Report on Wildlife of the San Francisco Estuary." This extensive report summarizes data available for many wildlife species in the Bay, including birds, mammals, amphibians and reptiles, some insects.

Roger Hothem, USFWS/Pacific Coast Field Station, is conducting studies on contaminants and reproductive success in **Snowy Egrets** and **Black-crowned Night Herons** in two colonies in San Francisco Bay. He is conducting preliminary telemetry studies this field season. **Joe Skorupa** and **Carolyn Marn** continue to investigate reproductive success in many species of waterfowl and shorebirds in the Tulare Basin in agricultural drainwater areas.

Louise Accurso, Humboldt State University, is finishing her Master's research on the distribution and abundance of wintering waterfowl in San Francisco Bay. This project is led by **John Takekawa** of the FWS Northern Prairie Field Research Station in Dixon.

Refuge biologists plan to continue aerial surveys of **Common Murre** breeding populations at Farallon NWR in cooperation with PRBO. Murre colonies throughout central and northern California will also be surveyed. Surveys were not conducted in 1991 due to funding constraints.

This will be the first seabird breeding season (1992) with boat restrictions in place at the Farallon Islands. Restrictions include seasonal closures (March 15 to August 15) to boat traffic within 300 feet of most of the islands, speed limits for all boats (5 mph within 1000 feet of islands) and noise restrictions for commercial dive boats engines and compressors. Regulations were designed to provide improved protection to seabirds and marine mammals, particularly to **Common Murres** and Steller sea lions. The effectiveness of these regulations will be reevaluated annually.

Refuge biologists conducted a successful experiment using exclosures around **Snowy Plover** nests at Salinas River and San Francisco Bay NWRs, to protect them from red fox predation. This project was conducted in cooperation with PRBO. Exclosures will be used throughout 1992 as a management tool to enhance plover production. Refuge staff trained California State Parks staff to manage exclosures, which will be used in all adjacent State Parks; PRBO personnel will detect and monitor nests in these parks. Results of this project from 1991 were presented at the annual meeting of the Western Section of The Wildlife Society in San Diego in February 1992 ("Predator exclosures for Snowy Plover nests" by **Mike Parker, Doug Roster, Jean Takekawa, John Warriner**, and **Jane Warriner**). Additional information collected on fledgling success will be used to evaluate the need for any additional predator management activities.

California **Clapper Rail** monitoring and studies in Francisco Bay continue. The population has fallen to w 500 based on annual surveys coordinated by the ge. Predator management (focusing on non-native red s) was begun by refuge staff in May 1991 and is now g done by Animal Damage Control. **Joy Albertson**, perative Education student with the Refuge, began her ster's research on factors affecting reproductive success California Clapper Rails, focusing on contaminants and dation. Radiotelemetry on Clapper Rails has been sucful and is providing many new findings about home ge, movement, and survival.

Dan Anderson of the University of California, vis is involved in the California Department of Fish and me study on **Brown Pelican** disease interactions and valence. He is continuing long-term monitoring studies the seabirds of the Gulf of California. **Deborah Jaques** completing her Master's research with Anderson on own **Pelican** communal roosting behavior and habitat during the nonbreeding period. **Deborah Jaques** and aig Strong have completed a survey of birds in coastal tral California State Parks, funded by California State rks.

Other students of **Dan Anderson** include **Darcy** n, who is finishing her Master's research on age-related production in **Red-footed Boobies**, and **Pollo Moreno,** o is conducting his Master's on **White Pelicans** on the eeding grounds in northern California and wintering ounds in Mexico. **Ruth Elbert** will begin her Master's oject this fall with Anderson, investigating ecotoxicology piscivorous birds.

D. **Michael Fry** is conducting a toxicity study to amine petroleum and dispersant effects on isolated red ood cells, as a model for hemolytic anemia of seabirds posed to oil. He is initiating a survey of pollutants in abird eggs along the Pacific Coast. A study is in progress mitochondrial DNA sequencing in **Marbled Murrelets** d other auklets, comparing California and Alaskan popuions. **Fry and Dan Anderson** continue their telemetry dies on the recovery of **Brown Pelicans** following rease from cleaning centers.

Jay Davis is conducting his Ph.D. research with **D. Michael Fry** on the ecology and pollutant exposure in ormorants in San Francisco Bay and the Delta.

Ken Warheit has moved to Olympia, Washington d is continuing his work on seabirds.

Jean Takekawa

Southern California

Two University of California, Los Angeles researchers are working on Johnston Island. Betty Ann Schreiber is continuing her work with **Red-billed Tropicbirds**, conducting both telemetry and breeding biology studies. **Lisa Ballance** is using doubly-labeled water to examine the links between wing loading and energetics in a number of seabird species. She is also looking at spatial and temporal changes in the composition of pelagic flocks.

Several researchers from the University of California, Irvine are involved in seabird studies. **Mary Beth Decker** has been conducting studies on the use of the frontal system off the Pribilofs by foraging seabirds. In addition, she is examining the effects of temporal variations in oceanic and climatic conditions on the reproductive success of **Thick-billed Murres** and kittiwakes. She is also in the process of analyzing her data on seabird use of tidally-generated upwelling in the Prince William Sound.

George Hunt has a three-year grant to work in the western Aleutians studying the relationship between foraging ecology of auklets and physical features in the island passes. He will be teaming with **Tom Weingartner**, a physical oceanographer, and **Ken Coyle**, a zooplankton specialist, both of the University of Alaska. They will assist, respectively, in identifying the physical aspects of the system and determining the distribution of prey. Some of the specialized equipment they will be using is an acoustic Doppler current profiler, a high-frequency echo sounder for prey, and a specialized net system to sample various layers for prey.

Libby Loggerwell will begin her second voyage with the Canadian Department of Oceans and Fisheries to examine the distribution and abundance of juvenile salmon and herring in the upper 10 m of water. Specially-modified nets will allow a continuous recording of prey information along a transect. This data will then be compared with the recorded distribution and abundance of birds along the transect.

Eric Wohler has been conducting studies in Antarctica on the relationships between seabird food consumption, energy flow, and carbon flux. He will be conducting similar studies this year in conjunction with George Hunt's study on the Aleutian Islands.

Rob Meade, a graduate student of **Stuart Warter** at the University of California, Long Beach, is studying intraspecific cooperative feeding behavior in **Red-breasted Mer-**

gansers and wading birds at Bolsa Chica Ecological Reserve.

Charlie Collins continues to oversee studies at Camp Pendleton Marine Corps Base on breeding biology and color banding of California **Least Terns**. He is also coordinating banding of young and adult **Elegant Terns** and **Black Skimmers** at Bolsa Chica Ecological Reserve. He will be using numbered plastic bands to monitor post-breeding dispersal.

A grant from the Environmental Protection Agency is providing the means for **Pat Baird** to create a new California **Least Tern** nesting site at Playa del Rey near Santa Monica. Permits from local agencies and the Coastal Commission have been obtained and fencing installed. She is now in the process of attempting to lure terns into the area with decoys and recorded calls. She is also assisting a student, **Lisa Cares**, who will be looking at factors, including age and length of pair bond, that may affect reproductive success in Least Terns. In addition, Pat is working with the Fish and Wildlife Service to assess the potential of a former salt pond in the San Francisco Bay area as future nesting habitat.

Barbara Massey will be completing her 22nd year (she says it's her last) of fieldwork on California **Least Terns**, conducting color-banding at Camp Pendleton. Barbara will also be assisting in June with a project funded by the Fish and Wildlife Service to monitor California **Least Tern** and western **Snowy Plover** nesting on the west coast of Baja California, from Laguna Figueroa through San Ignacio lagoon.

Other PSG members working on seabirds include **Paula White**, who is continuing studies on the arctic fox in the Pribilofs. Paula will be looking at fox interactions with the seabirds that nest there.

Michael Horn is studying the feeding ecology of **Black Skimmers** and **Elegant, Forster's, and Caspian Terns** that nest at Bolsa Chica Ecological Reserve in Huntington Beach.

The effects of sand grain size on a sandy beach upon shorebird feeding behavior is the focus of a study by **Pat Mock.** His findings to date are consistent with previous studies. Pat also he hopes to finish a paper on the energetics of nestling **Thick-billed Murres.**

Joseph Jehl is continuing studies of **Eared Grebes** and phalaropes at Mono Lake. Among other things, he has been documenting the mortality of Eared Grebes at Mono Lake and at the Salton Sea.

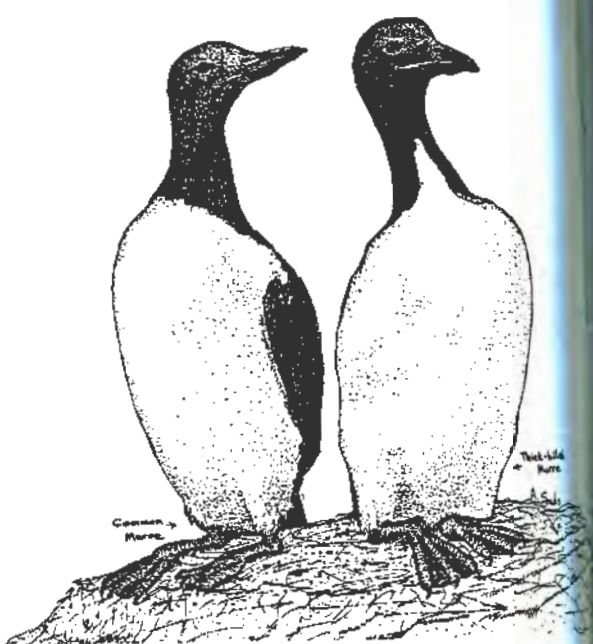
Least Terns are the focus of **Kathy Keane's** research. She is beginning her fifth year of monitoring the reproductive success of a California Least Tern colony at Terminal Island in the Los Angeles Harbor. In addition, she is assisting Pat Baird and Barbara Massey with banding adult Least Terns at Camp Pendleton.

Pro Esteros, dedicated to the preservation of Baja California's coastal wetlands, has received a grant to conduct studies with Point Reyes Bird Observatory to explore the entire west coast of Baja for the California Least Tern and western **Snowy Plover**.

Kathy Keane

Northeast

Dr. William H. Drury died March 26, 1992 at his home in Bar Harbor after a brief illness. He was 71. Bill had a long and distinguished career in scientific research, teaching, and numerous areas of conservation policy, land-use planning, and international environmental affairs. He served on the executive council of PSG during its formative years and influenced many seabird biologists and PSG members. An summary of his contributions to ornithology and PSG will appear in the next issue of the Bulletin.



Pacific

part of its conservation efforts, **Sea Life Park Oahu** has abilitated sick and injured seabirds since its beginnings the mid-1960s. Generally, about 300-400 birds are ught to Sea Life Park each year. Although numbers vary year to year, roughly 200 of these are fledgling dge-tailed **Shearwaters**. Most of these are brought in ween mid-October and mid-December. In any given the majority come in within a 4-week time period. This the peak was between 8 November and 7 December.

Marlee Breese, Curator of Mammals and Birds at Life Park reports that biologists there received 186 arwater chicks between 21 October and 20 December. these, 89 came in suffering from injuries of one sort or ther and/or low weight. Although the Sea Life Park logists have received **Wedge-tailed Shearwaters** with eyes (usually a condition of unknown origin) through- the years , this year they took in 49, an uncommonly ge number. The shearwaters are treated with an ophthal- antibiotic and, when healed, they are released.

Breese says that they successfully released 93 birds; fortunately, 84 birds did not survive their injuries. Sea Park will continue to care for 9 birds that sustained uries such as broken wings, making them unsuitable for ease.

G. Causey Whittow and Qinggen Zhang, of the partment of Physiology, John A. Burns School of Medi- e, University of Hawaii, have completed an extensive dy of embryonic growth and oxygen consumption in the ooty Tern, **Wedge-tailed Shearwater**, and **Laysan Al**tross. The results indicate different rates of growth of gans prior to pipping of the egg and a marked acceleration growth of some organs after pipping had occurred.

The U. S. Coast Guard will be terminating opera- n of a LORAN station at **Kure Atoll, Northwestern awaiian Islands** in June of this year. During September d August they will demolish most of the buildings present the island. In addition they will be removing the LORAN tenna, thus eliminating a significant hazard to resident abirds.

The U. S. Fish and Wildlife Service continues its work in the cific/Remote Island National Wildlife Refuge Complex. he USFWS Animal Damage Control and the Government American Samoa have been working cooperatively to adicate Polynesian rats from Rose Atoll NWR, American moa. The most recent of three trips to this 6.07 ha island ok place in September of 1991. Although the rat popula- on has been significantly reduced using live traps, snap ps, and the rodenticide Weatherblok with brodifacoum, is trip revealed the continued presence of rats. Four rats ere trapped over a 26-day period.

A fourth trip to Rose Atoll is scheduled for June of 1992. Biologists will survey for rats and continue the eradication efforts if necessary. Since the remaining rats may be avoiding the Weatherblok rodenticide, an alternate rodenticide, Vengeance (containing bromethalin), will be used during the operation, and Weatherblok will be left on the island when the operation is complete. A fifth trip is tentatively scheduled for September, pending the outcome of the June trip.

USFWS continues to monitor populations of seabirds on Johnston Atoll NWR. Service managers and biologists are also working closely with the military to minimize the affects of their activities on wildlife.

The U.S. Coast Guard will be ceasing operation of the LORAN station at Johnston and will be removing the 625 foot antenna and its associated guy wires. This antenna has caused the deaths of thousands of seabirds over the years.

Lisa Ballance, National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California will be measuring flight energetics of **Red-footed Boobies, Wedge-tailed Shearwaters,** and **Sooty Terns** at Johnson Atoll during spring and summer field seasons, and **Elizabeth Anne Schreiber,** Los Angeles County Museum of Natural History will continue monitoring the breeding parameters of seabirds for any potential affects of the Johnston Atoll Chemical Agent Disposal System. Betty Anne plans to establish baseline data to compare these parameters among years in order to insure continued successful breeding of the birds on atoll.

During December and January, USFWS biologists and volunteers conducted an intensive nest census of **Laysan and Black-footed Albatrosses** on Midway Atoll NWR, Northwestern Hawaiian Islands. Results will be presented at the 1993 annual PSG meeting. USFWS managers and biologists also continue to work with the U.S. Navy to reduce the effects of their activities on resident wildlife. **Mike Nishimoto** has been selected as the first Refuge Manager at Midway. **Don Williamson** continues as the Refuge Wildlife Biologist.

As a result of a scale-down of military operations, nearly all antennas have been removed from Midway. As at Johnston these antennas have killed thousands of birds every year.

Two **Short-tailed Albatrosses** were present on Midway again this season.

USFWS has initiated a program to control an alien grass, *Cenchrus echinatus*, on Laysan Island, Hawaiian Islands NWR. The grass threatens to drastically alter the ecology of this important seabird nesting island by outcompeting native plants. Biologists are present on the island year round in an effort to control the plant. In addition to their control duties, the biologists also monitor seabird populations. During December a nest census of **Laysan and Black-footed Albatrosses** was conducted to comple-

ment concurrent censuses at Midway and French Frigate Shoals.

USFWS biologists and volunteers continue year round monitoring studies of resident breeding seabirds at Tern Island. Studies are being initiated to measure basic reproductive parameters of **Red-tailed Tropicbirds** and **Great Frigatebirds.** Service biologists and volunteers completed a nest census of **Laysan and Black-footed Albatrosses** concurrent with censuses on Midway and Laysan Islands.

Mark Webber and **Chris Dippel** have been selected as the new Refuge Managers for the field station at Tern Island. **Jennifer Megyesi**, the current manager, will be transferring to Petit NWR and to the University of Massachusetts to pursue a Masters degree.

Paul Sievert (University of Pennsylvania) will return in May to begin the third and final year of his investigation of water balance constraints on the nesting ecology of tropical seabirds.

Ken McDermond

Inland

The importance of seabirds in inland waters was highlighted in an international symposium on Aquatic Birds in the Trophic Web of Lakes, held in Sackville, New Brunswick, in August 1991. European ornithologists and limnologists were especially well represented at this meeting, perhaps reflecting the greater appreciation of birds as system components outside North America. A variety of topics were covered, including relations between bird abundance and physiochemical characteristics of lakes, top-down effects of birds on trophic structure, and competition between birds and fish. Thanks go to **Joe Kerekes** for spearheading the organization of this meeting. Symposium proceedings will be published in a special issue of *Hydrobiologia*.

In early December 1991, thousands of migrating **Eared Grebes,** caught in severe weather, attempted to land on wet pavement and rooftops in western Utah. These birds were migrating from the fall staging area at Great Salt Lake to wintering areas on the Salton Sea and Gulf of California. Many died on impact or later from wounds suffered in the fall. As many as 8,000 grebes may have been killed. In February 1992, a die-off of mostly Eared Grebes occurred at the Salton Sea in southern California. Perhaps 50,000 grebes were lost in this incident, which is still under investigation by the U.S. Fish and Wildlife Service. The North American population of Eared Grebes is estimated at 1.5-2 million.

In March 1991, the U.S. Fish and Wildlife Service announced a research initiative on **Double-crested Cormorants** (see News Release in "Other Seabird News"). Recent population increases of cormorants have fueled concern about their impacts on Atlantic salmon, farmed catfish, and a variety of sport fish. This research program includes projects at the Cooperative Fish and Wildlife Research Units at the University of Maine and Mississippi State University, and at the La Crosse Field Station of the Northern Prairie Wildlife Research Center. This controversy has motivated a one-day symposium on "The Double-crested Cormorant, Conservation and Management" at the October 1992 meeting of the Colonial Waterbird Society in Oxford, Mississippi (for details contact D. V. Weseloh in Ontario, 416-336-4988).

Andy Aderman of Mississippi State University will complete his Master's thesis entitled "Roosting locations and population estimation of wintering **Double-crested Cormorants** in the alluvial valley of Mississippi" in May 1992. A maximum of 12-13 roosts (usually 6-13) were used per month while the birds were present from late September to late May. Counts at single roosts varied from 0-14,000, the latter being an extreme concentration during a 10-year ice event. Counts at dusk and dawn indicated little movement between roosts at night.

Scott Findholt of the University of Wyoming has completed the first draft of his dissertation on the foraging ecology of **White Pelicans** nesting at Pathfinder Reservoir. Most of the biomass consumed was adult carp, adult white suckers, and tiger salamanders. With low water levels, this colony has failed in the last two summers with loss of about 1200 nests in 1990 and 600-700 nests in 1991.

Clayton Derby and **Jim Lovvorn** are beginning a study of the impacts of **Double-crested Cormorants** on trout stocked in the North Platte River upstream of Casper. Limited anecdotal information suggests that cormorant diets may shift between riverine fish in dry years to tiger salamanders in wet years when outlying wetlands are flooded. Research plans include field and laboratory studies for developing energetics models of the population food requirements of cormorants.

John Baldwin and **Jim Lovvorn** have completed their second field season of research on use of intertidal and upland habitats by dabbling ducks in the Fraser River Delta, British Columbia. From arrival in October until late November, **American Wigeon, Northern Pintails,** and **Mallards** feed almost entirely in the intertidal zone. The exotic eelgrass *Zostera japonica* has created an important new

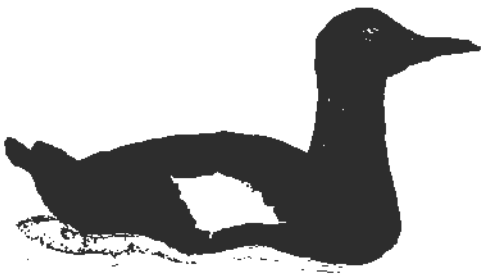
bitat on formerly unvegetated intertidal sediments. *Zostera ponica* is grazed heavily by wigeon and brant, and supports abundant invertebrate populations exploited by other ucks and juvenile fishes. This new vegetation type (which vaded in the late 1950s) is also important to fish-eating rds that hunt in tidepools or at high tide, or that depend on earshore food webs supported by eelgrass detritus. Lovvorn also continuing his research on the energy costs of derwater locomotion and thermoregulation in diving ucks.

Bruce Pugesek of the National Wetlands Research enter continues long-term research on the population ology and life histories of **California Gulls** at Bamforth ake National Wildlife Refuge in Wyoming. This project, egun in 1958, is one of the longest continuous studies of the reeding histories of individual birds. **Chris Nations** will egin the second field season of his Master's research at the niversity of Wyoming as part of the Bamforth Lake gull roject.

Eileen Kirsch of the Northern Prairie Wildlife esearch Center, La Crosse Field Station is beginning a udy of the distribution and abundance of **Double-crested ormorants** along the Mississippi River from St. Louis to e Twin Cities. Aerial surveys will be used to locate roost es and colonies throughout the year. Effort will be made identify what proportion of cormorants on the upper ississippi River are breeders.

Jim Glaum (USDA APHIS) continues his work to velop bioenergetics estimates of the impact of **Double-rested Cormorants** on catfish farms. This research inolves food habits studies, radiotelemetry, and roost counts Andy **Aderman's** project described above). The distance etween roosts and foraging sites is usually 15-30 km, with maximum of 40 km. Diets of cormorants collected at osts was about half gizzard shad and half catfish.

James Lovvorn



Stone '92

Southeast

Keith L. Bildstein from Winthrop College, Rock Hill SC is in the 14th year of a long-term study of **White Ibises** breeding in coastal South Carolina and is in the 3rd year of tracking the recovery of this population from the effects of Hurricane Hugo. He has found that damage to freshwater feeding sites associated with the hurricane has had a severe impact on the breeding population.

David F. Brinker of the Maryland Department of Natural Resources in Wye Mills continues to monitor colonial waterbirds in Maryland. However, fiscal constraints currently allow the monitoring of only some species, usually those with small populations. Much of Brinker's recent fieldwork has consisted of surveys of rails, surveys that have greatly increased knowledge of **Black Rail** distribution in Maryland.

Heron and **anhinga** colonies in Alabama's coastal plain are the focus of continuing surveys by **Julian Dusi** of Auburn University. Anhinga populations have increased recently and have had an extended breeding season. In 1991 they had young in the nest as late and September, and this year they began breeding in March.

R. Michael Erwin of the USFWS Patuxent Wildlife Research Center will be putting radios on **Snowy Egrets** and **Black-crowned Night Herons** at Chincoteague, Virginia to determine wetland habitat use and nestling mortality. Erwin is currently analyzing results of a two-year Earthwatch project in eastern Virginia that assessed wetland habitat use by wading and shorebirds.

Although he is doing little work specifically on colonial waterbirds, **Douglas J. Forsell** (USFWS, Chesapeake By Estuary Program, Annapolis, MD) is developing a program to census all species of migratory waterbirds found on the open waters of Chesapeake Bay. His study will use new methods to analyze the results of aerial surveys.

Gilbert S. Grant of Coastal Carolina Community College in Jacksonville NC is taking a two-year position in American Samoa, where his primary research, in collaboration with **Pepper Trail**, will be on fruit bats. Grant also plans to work on sea turtles and birds.

Susan B. Haig of the Clemson University Coop Unit, Clemson SC is evaluating the use of impoundments by shorebirds under different management regimes. Haig is looking at both wintering and migrant populations.

Todd Haas of the University of North Carolina at Chapel Hill is comparing 15 years of **David Lee's** offshore seabird observations with satellite imagery and oceano-

graphic features to determine the bases of pelagic microdistribution.

Phylogenetic reconstruction, historical biogeography, and the ecology of helminth faunas of marine birds and mammals are the subjects of **Eric P. Hoberg's** studies at the USDA Biosystematic Parasitology Lab in Beltsville MD. Hoberg's most recent studies deal with the evolution of tapeworms in alcids and pinnipeds and the distributional history of hosts and parasites in the Holarctic during the late Pliocene and Pleistocene. He is currently working on systematic studies of tapeworms in alcids, phalacrocoracids, and procellariiformes.

David S. Lee of the North Carolina Museum of Natural History in Raleigh has recently returned from Cuba, where he was involved in a cooperative venture with the Cuban Academy of Sciences. Lee and his Cuban colleagues were trying to locate breeding areas of **Black-capped Petrels** but found none. Lee is also summarizing his many years of pelagic observations off North Carolina in a series of species-specific papers. He is currently writing one that looks at the distribution and pelagic ecology of the **Manx Shearwater**.

James F. Parnell of the University of North Carolina at Wilmington continues to work on colonial waterbird populations in North Carolina. He is also continuing his studies on management strategies of colonial waterbirds, and, along with **Mark Shields**, is beginning detailed studies of life history strategies of **Brown Pelicans**.

A status review of the **Reddish Egret** for the USFWS has recently been completed by **Richard T. Paul** of the National Audubon Society in Tampa FL. Paul is also monitoring some 50,000 pairs (25 species) of colonial waterbirds in the Tampa Bay region. In addition, Paul is working with Audubon chapters to develop colony protection programs for terns and skimmers and is involved in multi-agency development of a plan to manage spoil islands for large colonies of terns and gulls.

William B. Robertson, Jr. of Everglades National Park and **Glenn Woolfenden** have recently completed an annotated checklist of birds of Florida which will be published this summer by the Florida Ornithological Society. The Robertsons continue to make observations of a population of 300-400 individually color-marked Sooty Terns at the Dry Tortugas. William and **Betty Robertson** are focusing their investigations on year-to-year changes in nest-site distribution, mating patterns, and integration of new breeders into the population.

Jeffrey A. Spendelow of the USFWS Patuxent Wildlife Research Center is continuing his cooperative work on **Roseate Terns** in Connecticut, where he has been analyzing survival and intercolony movement on a regional basis. Spendelow has found extraordinarily high mortality, nearly 20%, of breeding adults and a movement rate to other colonies of about 5%. Spendelow is also beginning a study of shorebird population dynamics at Chincoteague NWR, Virginia. He is looking at the average length of stay during migration.

Roger Cla

SUED IF YOU DO AND SUED IF YOU DON'T

Most readers will know that the *Exxon Valdez* ran aground in Prince William Sound, Alaska, in 1989 and that the captain of the tanker was accused of being drunk at the time. The resulting oil spill killed an estimated 350,000-390,000 seabirds, especially murres. Exxon recently agreed to pay over $1 billion to settle the legal claims against it. Few will know of a more recent suit against Exxon. After the oilberg disgorged its contents into Prince William Sound, Exxon banned employees who had a history of alcoholism from key posts aboard tankers. Such a policy would seem to be a sensible means by which Exxon might fulfill its responsibilities to protect the environment. Banning substance abusers from key positions on tankers might do more to protect seabirds from oil spills than many other suggestions the Pacific Seabird Group might make. Wrong. In January 1992, a jury in Maine awarded a former chief engineer on the *Exxon Wilmington* more than $750,000 in damages against Exxon for breach of contract and negligent infliction of emotional distress. The engineer had been treated for alcohol abuse in 1988 and was demoted to a desk job after the *Exxon Valdez* spill. Apparently no murres were on the jury.

Craig S. Harrison

Washington Report

Daphne Gemmill

Twenty-two years after the first Earth Day, demonstrating concern about the environment has become pervasive in the media. Smiling "mothers" on TV commercials inform us of the importance of recycling (and the need to buy their "environment-friendly" products). A children's cartoon features heroes whose evil nemesis is environmental destruction, instead of the more conventional black-caped villains. Celebrities make personal appearances touting the need to conserve the planet's resources. This publicity, self-serving and otherwise, provides positive attention towards environmental problems and their possible solutions. This is especially true on the political front. With one exception, the now-narrow field of presidential candidates have included environmental issues in their campaign platforms.

The following summaries of the candidates' environmental positions have been based on the League of Conservation Voters report, "The Presidential Candidates 1992: Records and Positions on Energy and the Environment". If you would like a copy of their entire report, write to League of Conservation Voters, 2000 L St. NW #104, Washington DC 20036.

PATRICK J. BUCHANAN (R)

Buchanan's career in the media has not given him the opportunity to influence environmental policy directly. He did make his views known during his position as Reagan's Director of Communications, however, by bemoaning public criticism of James Watt.

Most of his potential actions on any issue can be based only on his written and spoken views. He has commented several times on what he sees as the adversarial nature of industry and environmentalism, though he has supported some environmental action. For example, Buchanan has suggested liming lakes in order to neutralize the acid in their rainfall. Environmentalists generally have criticized liming as a "too little, too late" solution that treats symptoms of pollution rather than addresses its causes.

In keeping with his non-government interference beliefs, Buchanan has proposed a two year moratorium on environmental regulations that "jeopardize jobs and impose on business and private property rights". But for the most part he ignores the environment altogether, preferring to focus on economics, foreign and domestic political reform, and the need for social change.

GEORGE BUSH (R)

In his 1988 inaugural speech, Bush swore to be, among other things, "the environmental president." As a congressman, his record early in his career demonstrates the start of this promise. He introduced the first and largest bill to preserve the Big Thicket in Texas as a National Park. He also led an effort to prevent the channelization of the Buffalo Bayou near Houston. However, as Vice President, Bush embraced the Reagan administration's laissez faire attitude toward the environment, announcing revised EPA programs for pesticide registration, air pollution standards, and hazardous waste regulations.

As President, his policies in general consist of "band-aids" rather than fundamental changes. For example, the US has pledged to contribute $75 million in international funds designed to aid developing countries in combating "the greenhouse effect." Bush has set up the EPA's Green Lights Program, which helps state governments and corporations install energy-efficient lighting, and has pledged to plant 1 billion trees each year. His best known environmental action has been signing the 1990 Clean Air Act into law.

However, like Buchanan, Bush believes "pro-business" conservatives see any positive environmental action as threatening. To balance his environmental programs and funding, he reneged on his 1988 "no net loss" pledge toward wetlands and "redefined" some 30 million acres. While his administration's 1991 budget requested phasing out logging on 12 "below-cost" (unprofitable) National Forests, it withdrew the request in the face of congressional opposition and has not renewed it since. And it is not surprising with his oilman background that Bush supports oil and gas exploration in the Arctic National Wildlife Refuge and ignored energy conservation and environmental protection when introducing his 1991 National Energy Plan.

In addition to not changing basic standards on his own, Bush has criticized adopting international goals. He refused to join world leaders in an agreement that would reduce carbon dioxide emissions to 1990 levels by the year 2000, citing that to cut back would place the United States at an economic disadvantage. Like Buchanan, it seems unbelievable to Bush that protecting the environment could actually improve a country's standard of living, though Japan and some European nations are basing their own economic projections on that theory.

Approximately 160 world leaders will participate in the largest U.N. summit session in history—the "Earth Summit"—in Rio De Janeiro this June. The purpose of the meeting is to produce international treaties and regulations that will provide common worldwide standards and goals for environmental protection. At this date, Bush is planning a one day "lightning trip," illustrating his administration's basic unconcern.

JERRY BROWN (D)

During his tenure as California's governor, Brown was on or near the cutting edge of many environmental issues. His administration supported several conservation proposals, including setting aside 400,000 acres for the Golden Trout Wilderness, lobbying for National Park status for the Mineral King Valley, and forcing the Redwood Park Expansion Project through Congress. He urged energy conservation, and aggressively pursued renewable and alternative energy sources. He strongly regulated nuclear power plants, later opposing them altogether. Under his tenure, California had the strictest pollution control policies in the nation.

However, Brown also allowed oil development interests to lease tracts of the state's Outer Continental Shelf, despite the possibility of oil spills. Most importantly, he favored the construction of the Peripheral Canal, which would channel northern California's comparatively ample water supply to the needy central and southern parts of the state. However, even with the promise of environmental safeguards, the general opinion was that the canal would cause too much damage to the environment, and it was defeated in a state referendum.

In his current campaign, Brown makes "politically correct" promises about the environment. He has been the most successful of all the candidates at developing and retaining safe standards and practices. While some polici[es] are disturbing, his overall record is good.

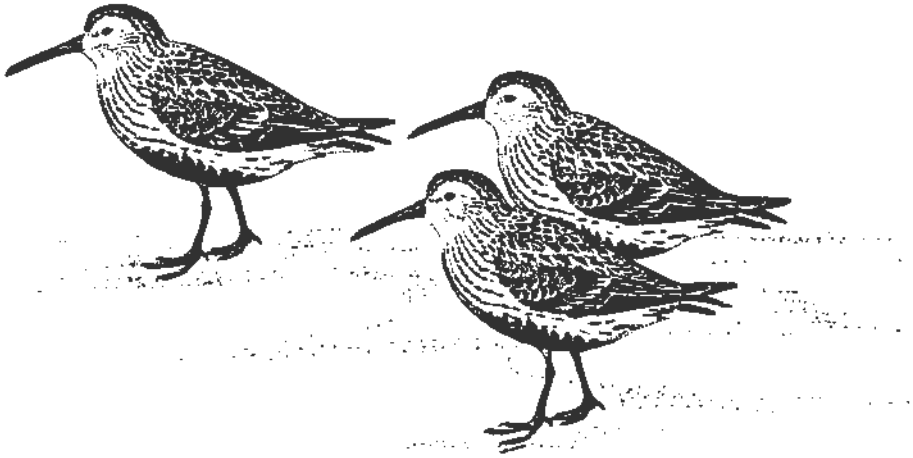
BILL CLINTON (D)

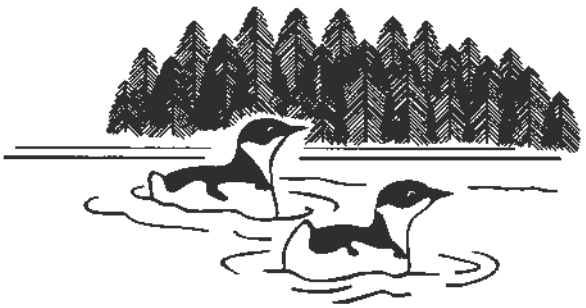
Arkansas environmental leaders call Clinton a "late com[er]" to the environmental movement. During his five terms [as] governor, he has slowly begun working on the state['s] environmental problems.

Clinton has been strongly criticized for his lax[ity] toward the powerful poultry industry. Waste disposal fro[m] the plants has polluted nearly 600 miles of streams in th[e] northwest. Unregulated mass dumping by companies a[nd] individual farmers accidentally poisoned Green Forest['s] drinking water supply in 1983. It took seventeen month[s] after this catastrophe for Clinton to declare a "disast[er] emergency". The situation forced the modernization o[f] treatment plants and the setting of pollution limits. There i[s] a task force now specifically addressing water pollution, bu[t] critics complain of the preponderance of poultry industry officials over environmentalists on the governor-appointed panel.

In contrast, Clinton has been very successful i[n] conserving land tracts, and he took part in establishing [a] permanent fund for land preservation. In 1991, Clinton signed into law a major package of environmental legisla[-] tion, including a "no net loss" policy for forest land, and he has increased penalties for environmental violations. He advocates protection of the Nation's wetlands.

While some observers see this legislation as a new leaf, others remain troubled by Clinton's history of appointing industry representatives to environmental commissions, and his apparent blindness to potentially dangerous situations. It remains to be seen if Arkansas' troubles have opened his eyes to environmental problems in general.





Marbled Murrelet
(Brachyamphus marmoratus)

Napa Valley
Merlot

ALCOHOL 12.7% BY VOLUME

This Merlot has been specially bottled to celebrate the efforts of the Pacific Seabird Group for the conservation of the Marbled Murrelet (Brachyramphus marmoratus). The already small number of this small, diving seabird are being reduced at ocean feeding areas by oil spills and fisherman's gill nets. Proceeds from the sale of this wine will help support PSG's efforts.

GOVERNMENT WARNING: (1) ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF BIRTH DEFECTS. (2) CONSUMPTION OF ALCOHOLIC BEVERAGES IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE MACHINERY, AND MAY CAUSE HEALTH PROBLEMS.

PRODUCED & BOTTLED BY
SPINETTA VINTNERS
ST. HELENA, CA

CONTAINS SULFITES

For those who were not fortunate to attend the Charleston meeting, we reproduce here the label from the special bottling of Marbled Murrelet Merlot that helped make the meeting such a succcess. The fund to publish the Marbled Murrelet Symposium received $3 from the sale of each bottle. Feel free to cut out the label, wrap it around a bottle of your favorite beverage and then write a check to assist with the publication..

1992 Annual Meeting

Charleston, Oregon

15 - 18 January

The Pacific Seabird Group's 19th Annual Meeting was held in Charleston, Oregon from 15-19 January at the Oregon Institute of Marine Biology (OIMB) in Charleston, Oregon. The meeting was sponsored by the OIMB and the U.S. Fish and Wildlife Service. Janet Hodder was chair of the local committee and Palmer Sekora was prorgram chair.

The meeting was proceeded by a day long meeting on computer-based seabird databases organized by Gordon Reetz of the Minerals Management Service and Palmer Sekora of the U.S. Fish and Wildlife Service. Presentations were made by researchers administering colony catalogs and pelagic databases, and discussions centered on the integration of databases between regions, and ultimately, integrating colony and pelagic databases. An afternoon discussion on the archiving of seabird data examined the problems encountered when attempting to access and interpret historic data sets. It was agreed that properly documenting and archiving colony data is important for any future research or legal use of the information and that government agencies have not adequately addressed this issue. A similar session on databases will precede the 1993 meeting in Seattle and all interested parties are invited to attend. Further information will be included with the meeting announcment.

Devoting a full afternoon to committee meetings provided a welcome break from the paper sessions and allowed enough time for discussion of conservation issuses. Providing time for conservation discussions should be a priority at all future PSG meeings. Social activities included a seabird slide show that allowed attendees to obtain slides for the collections of species that they have not had the opportunity to photograph. This was the first annual meeting PSG has held in Oregon and the facilities provided an ideal relaxed setting for increasing the flow of information among seabird researchers, managers, and enthusiasts. We'll certainly want to return to Oregon for future meetings.

Dear Editor,

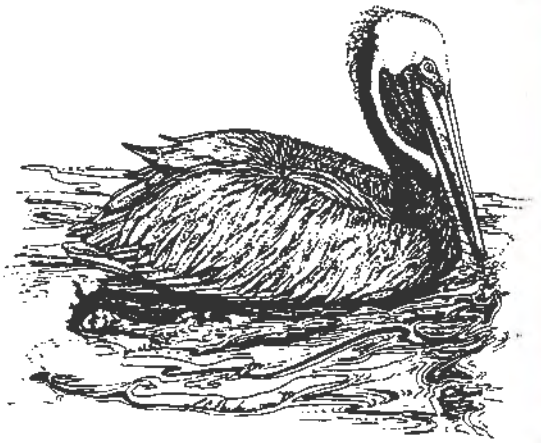
I am a new member of PSG, and this was my first meeting. It was a dynamic meeting and I am really glad that I attended. Registration went smoothly, the folks in southern Oregon were very friendly, and I sensed a lot of energy and concern among the membership that was in attendance for the preservation of our wonderful seabirds. There were interesting and vigorous discussions during the committee and executive council meeetings about the seabird monitoring program, conservation, and other important issues.

There was a lot of camaraderie, the food was great, the scenery along the southern Oregon coast was beautiful, the banquet and the special speaker were excellent, and the Marbled Merlot wine was a big hit. The members of PSG that didn't attent missed a very good meeting!

I am looking forward to next year's annual meeting in Seattle.

Sincerely,

Donna O'Daniel
U. S. Fish and Wildlife Service
Johnston Atoll NWR
P. O. Box 396
APO AP96558



Summary of Minutes of the Executive Council Meeting

The following is a summary of the Executive Council meetings held on 15 and 17 January 1992 in Charleston, Oregon. Anyone wanting to obtain the complete minutes of the meeting should contact the PSG secretary Beth Flint.

Malcolm Coulter called the meeting to order at 1330. A quorum was present consisting of Malcolm Coulter (chair), Palmer Sekora (chair-elect), Beth Flint (secretary), Ellen Chu (treasurer); past chairs Mike Fry and Scott Hatch, regional representatives Harry Carter (proxy for Jean Takekawa), George Divoky, Jim Lovvorn, Roy Lowe, and Ken McDermond. Eighteen additional PSG members participated in the meeting.

Bylaws

As a result of points raised at the PSG 2000 meeting at last year's annual meeting, a Bylaws Committee was established consisting of Palmer Sekora, Doug Siegel-Causey, and Malcolm Coulter. During the past year they proposed that the term "conservation" be added to the organization's objectives and that a Viec-Chair for Conservation be established. These suggestions were put to the membership and adopted by the Group with 159 in favor of adopting the changes and 6 opposed. The office of Vice Chair for Conservation was included in the elections held in late 1991.

Meetings

Janet Hodder, local committee chair, reported that 125 people had registered for the Charleston meeting and that there were 50 papers (8 of them posters). She mentioned that charging a higher registration fee after a certain date had been successful in causing most people to register in a timely manner and recommended that this practice be continued. It was pointed out that roughly half the people presenting papers at the Charleston meeting were not PSG members, and it was proposed that at future meetings registration for non-members be $10 higher and include membership in the PSG.

The next annual meeting will be held on 9-13 February 1993 in Seattle, Washington; it will be the 20th annual meeting. The local committee Lora Leschner (chair), Ellen Chu, and George Divoky discussed the possible sites for the meeting and the trade-offs between an easy access downtown hotel or a rural, aesthetically pleasing locale. The Executive Council voted for a downtown Seattle location. The Seattle meeting will be from Tuesday through Friday, allowing the weekend to be for field trips and/or travel. The meeting will have a paper sessions on Pacific Northwest seabirds and will celebrate the 20 years of PSG accomplishments.

There was a discussion of sites for the 1994 meeting. Lora Leschner had already put PSG on the waiting list for Asilomar in 1994 in case we decide to go there (PSG has held meetings there 6 times). Ken Warheit pointed out that the PSG 2000 survey indicated that attendance would drop if the annual meeting is too distant from the central-California-to-Seattle area. Ken Briggs suggested the Sacramento area and pointed out that a strong local committee was present there. The Council then voted to hold the 21st annual meeting in Davis/Sacramento, California

PSG Bulletin

Martha Springer will assume the duties of *Pacific Seabird Group Bulletin* editor with the 1992 volume. The Bulletin Working Group believes the Bulletin should attempt to change its focus from just presenting information on seabird research and researchers to placing more emphasis on seabirds themselves and conservation issues relating to seabirds. Such a change in focus would increase interest in the publication from people interested in the Pacific Seabird Group to those interested in Pacific Seabirds. There was some discussion on the need to have regional representatives take the time to contact all potential researchers in their area so that the *PSG Bulletin* provides comprehensive information. There was also discussion on how an expanded Bulletin would put greater demands on the editor and that it may be necessary in the future to provide a stipend for editorial duties.

Council Elections and Officers

Doug Forsell of the election committee reported on elections held in the fall of 1991. The results of that election were:

Chair elect	George Divoky
Vice Chair for Conservation	Craig Harrison
Secretary	Beth Flint
Treasurer	Ken Warheit
Central California Representative	Jean Takekawa
Southern California Representative	Kathy Keane
Great Lakes Representative	James Ludwig
Southeast Representative	Roger Clapp
Northeast Representative	Mark Tasker

Palmer Sekora has written expanded and more detailed descriptions of the duties of office holders using responses from current office holders. These descriptions should be used by incoming officers as well as those considering running for an office. Ken Warheit proposed a change in the PSG regions with the new regions being

Beringia (Alaska and Eastern Russia)
Canada
Washington/Oregon
Northern California (north of Monterey)
Southern California (south of Monterey)
Pacific Rim (including Latin America, Pacific Islands and China)
Remainder of United States
Old world or eastern hemisphere (including New Zealand and Australia)

The council voted to accept these changes and the necessary change in the by-laws will be presented to the membership. (See PSG2000 Report in this issue.)

Memberships

The percentage of memberships being renewed annually continues to be high, but there is a need to solicit new members. Approximately half of the people giving papers at the Charleston meeting are not PSG members and it was proposed that there is a need to have two levels of registration for future meetings with nonmembers paying a higher rate that would include a year's membership in PSG. Local committees will be instructed to use this two-tiered system at future meetings.

Art Sowls reported that the Conservation Committee had collected $80 for the sponsorship of foreign members. The council voted against a reduced rate of $10 per year for sponsored foreign membership. PSG members wanting to sponsor foreign members ($15 per year) should contact Ken Warheit.

Publications

Harry Carter reported that the Marbled Murrelet Symposium will be published by the Western Foundation for Vertebrate Zoology. The total cost of the publication will be $10,000. The U.S. Fish and Wildlife Service has pledged $2,000. Additional funds are being raised through the sale of Marbled Murrelet Merlot. The Executive Council voted to have PSG contribute $1500. Doug Forsell mentioned that it would be good to have PSG members receive discounted rates for those publications that are subsidized by PSG.

Kees Vermeer reported that the Symposium on North Temperate Seabirds held in Victoria, B.C. is still being edited.

Conservation committees

Art Sowls reported that the Conservation Committee had produced 17 letters on 9 topics for the Executive Council Chair to sign. These letters were sent to government agencies including USFWS, NOAA, NMFS, BLM, EPA, the State of Alaska, Japan, and New Zealand.

Art reported that there has been a change of government on the Pribilof Islands and that the current administration is more sympathetic to conservation issues and has asked for assistance in developing proposals for marine sanctuaries.

Malcolm Coulter discussed the conservation network that will assist PSG in working with other conservation groups. He mentioned that David Duffey, head of the working group on seabirds for the ICBP, is soliciting participation in the development of Action Plans for seabirds.

PSG's delegates to the ICBP are Malcolm Coulter and Ron Naveen. North American ICBP delegates meet in April, December, and at the AOU meeting. Two important legislative issues coming up are the Partnerships for Wildlife and the reauthorization of the Endangered Species Act.

Treasurer's Report for 1991

Income

As always, most of our income in 1991 came from membership dues, including life memberships. Unlike regular memberships, which become part of PSG's yearly cash flow, life membership dues are deposited directly into the Endowment Fund. In 1991 PSG received $5,222.71 in regular memberships and $1,500.00 in life memberships. In October, businessman and birder Ted Cross donated $5,000 to PSG, with no strings attached, thanks in part to his acquaintance with John Piatt and Malcolm Coulter. He was given life membership and a warm letter of thanks. In addition, PSG received $70.00 from T-shirt sales by Nancy Naslund and $195.00 in other unsolicited donations. (T-shirt sales at the Charleston, Oregon, meeting will be counted in our 1992 budget.)

The figure for the Monterey Annual Meeting is net "profit," after actual meeting expenses have been subtracted. Despite contributions by Moss Landing Marine Lab and UC Santa Cruz, this figure is only just over half the net gain of the Victoria meeting.

Expenses

The $1500 symposium printing expense was approved by the Executive Council in 1987 for printing *Studies in Avian Biology*, No. 14, "Auks at Sea," published in conjunction with the Cooper Ornithological Society; the paperwork came through only in 1991.

Increased officers' expenses this year reflect increased activity on the part of many volunteers, particularly the PSG 2000 committee. The 1991 Bulletin cost $3,746 to print and mail, partly because issue 18(2) contained a membership directory, making it as big—and therefore as expensive—as issue 18(1). Despite desktop publishing, total 1991 *Bulletin* costs came to nearly $1,000 more than the top figures for the past five years.

The accounts for the Charleston meeting are being kept by Janet Hodder of the Oregon Institute of Marine Biology and will be entered into next year's report.

North Pacific Symposium

At the request of Kees Vermeer, a separate savings account has been established for contributions for printing the symposium proceedings from the Victoria meeting on North Pacific seabirds. Chapter authors should send their page charges to the treasurer in Kirkland for deposit into this fund.

Endowment Fund

The endowment fund is in the form of US Government Securities, brokered through Dean-Witter Reynolds. As of December 1991, PSG owned 3593 shares at $9.52 per share, for a total market value of $34,200.85 (compared with 2634 shares at $9.37 per share in December 1990). Donations, life memberships, and income from fund raising are deposited directly into this fund.

Examination of past minutes revealed that the Endowment Fund was set aside specifically for funding symposia, and only interest is to be used [see letter from Judith Hand, *PSG Bulletin* 18(2): 1991 and 10(2): 1983].

Membership

As of 1989, "current members" have been defined as those who have paid their dues for a given year before the first issue of that year's *Bulletin* has been mailed. Forgetful members can rejoin at any time, but only current members receive the *Bulletin*. At the end of 1991, PSG had 336 members who were paid through 1991 or later (334 current members in 1990); of these only 34 joined for the first time in 1991. This means that our renewal rate is now almost 90%, but it also means that we need to put more effort into recruiting new members. In addition, 54 institutions worldwide receive the *PSG Bulletin*, of which 26 are paid subscriptions and the rest are journal exchanges or goodwill gifts.

Dues notices were sent out in November 1991, and at press time, the renewal rate is running about 75%, with about 25 new members joining in the first quarter of 1992.

New Treasurer

Ken Warheit takes over as treasurer in mid-1992. To transfer duties as efficiently as possible, I will continue to process 1992 dues and pay all PSG bills out of the main PSG checking account in Kirkland, Washington, until Ken has a stable address in late summer. Ken will take over all other treasurer-like duties, including keeping an updated mailing list. Please direct any requests for mailing labels to him from now on.

Thanks for an amazing four years.

Respectfully submitted,

Ellen W. Chu, Treasurer
Pacific Seabird Group
15 Central Way, Suite 197
Kirkland, WA 98033 USA

Treasurer's Report for 1991

CARRYOVER FROM 1990		
Treasurer's checking acct.	$3,633.32	
Bulletin checking acct.	$325.55	
UK account	$563.20	
Savings	$8,696.45	
Endowment (as of 12/31/90)	$24,680.58	
Total carryover		**$37,899.10**
1991 INCOME		
Dues	$6,722.71	
Donations	$5,195.00	
Annual meeting (Monterey): net	$928.22	
Fund raising	$70.00	
Interest on savings + endowment as of 12/31/91	$3,153.47	
Misc. income (incl. interest on chkg)	$0.00	
Total income		**$16,069.40**
1991 EXPENSES		
Bulletin and related costs	($4,262.34)	
ICBP dues	($200.00)	
Officers' (supplies, postage, etc.)	($1,542.68)	
Fund raising	($0.00)	
Returned check, bank svc. charges	($33.00)	
Symposium printing (Cooper OS)	($1,500.00)	
Total expenses		**($7,538.02)**
1991 INCOME OVER EXPENSES		**$8,531.38**
ACCOUNT BALANCES		
Main checking (as of 12/31/91)	$3,633.32	
Bulletin acct., Aiken, SC (as of 12/31/91)	$325.55	
Bulletin acct., Lawrence, KS	$492.54	
UK acct. (@ £1.00 = $1.50)	$165.00	
Savings (as of 12/31/91)	$10,291.50	
Endowment (as of 12/31/91)	$34,200.85	
Total assets		**$49,108.76**

Income

As always, most of our income in 1991 came from membership dues, including life memberships. Unlike regular memberships, which become part of PSG's yearly cash flow, life membership dues are deposited directly into the Endowment Fund.

Report from the Marbled Murrelet Technical Committee

S. Kim Nelson, Chair

pecies Status

In June 1991 the U.S. Fish and Wildlife Service roposed listing the Marbled Murrelet as a threatened pecies in Washington, Oregon, and California. A final ecision on the listing is expected in June 1992. The urrelet was listed as endangered in California by the alifornia Department of Fish and Game in March 1992. tate listing in Washington and Oregon is pending.

EGIONAL REPORTS

laska

.S. Fish and Wildlife Service - Kathy Kuletz

In 1991 the feasibility study to identify Marbled urrelet nesting habitat in Prince William Sound was ompleted. The information will be used to guide acquisi- on or protection of habitat that would benefit Marbled urrelets in the *Exxon Valdez* oil spill zone. Kathy Kuletz P.I.), Nancy Naslund, Dennis Marks, Mary Cody, and George Esslinger conducted the study, which was based on Naked Island. The team surveyed for murrelets in four orest types, monitored seasonal activity, tested tape record- rs and conducted marine surveys of the study area. Four ree nests were found; these were the first documented tree ests in southcentral Alaska.

This year Kathy Kuletz, Nancy Naslund, and Den- is Marks will continue nest searches and behavioral studies n Naked Island. They will also initiate an upland survey of Prince William Sound which will incorporate at-sea densi- ies, upland habitat, and murrelet detections. Damage ssessment and restoration reports for the Marbled Murrelet ill be completed for possible release in late 1992. In ddition, private lands on Afognak Island, north of Kodiak, ill be surveyed for murrelets for consideration in the estoration process.

John Piatt coordinated with Glacier Bay National ark biologists to conduct marine surveys for *rachyramphus* murrelets in Glacier Bay, and he hopes to ontinue the surveys in 1992. John is also compiling data on urrelet food habits throughout Alaska.

British Columbia

Vancouver Island - Irene Manley and John Kelson

A second Marbled Murrelet tree nest was discovered in August 1992 in British Columbia. The nest was located in an old-growth Sitka spruce tree in the Walbran Valley on the east coast of Vancouver Island, within 200 m of the 1991 nest. The nest was discovered through an intensive tree climbing effort.

Washington

Washington Department of Wildlife - Tom Hamer and Eric Cummins

A study of the relationships between forest characteristics and the use of inland sites by Marbled Murrelets in northwestern Washington was conducted. Surveys for murrelets were done using fixed point morning surveys at 68 old-growth stands in the North Cascades of Washington in 1991. Highest detection rates were recorded 35 km inland with a rapid decline in abundance after 60 km. Over 90% of all detections were recorded at sites less than or equal to 60 km inland. The farthest inland detections occurred 72.4 km for the nearest saltwater. Twenty-nine forest variables were measured at 54 of these stands using a 25 m radius plot. A t-test compared each forest variable between high- and low-use stands. High-use stands were defined as those sites with >10 detections per morning and with detections on at least 2 of 4 surveys. By definition, 42 sites were labeled low-use and 12 as high-use.

Site elevation ranged from 213 to 1,493 m. Stands with high-use were significantly lower in elevation, had a higher percent composition of Douglas fir, western hemlock, and western red cedar, and a lower composition of silver fir. The mean diameter (DBH), aspect, and number of potential nest platforms were all significantly higher in high-use than low-use stands. Over 89% of all detections were recorded below 900 m in elevation.

In general, a stand receiving high-use by murrelets in the North Cascades may be characterized as old-growth coniferous forest less that 900 m in elevation, located less than 60 km from saltwater, with over 73% composition of Douglas fir, western hemlock, and western red cedar with a mean DBH of 134 cm, with less than 27% composition of silver fir and mountain hemlock, an abundance of large

limbs and platforms, and often located on slopes with an east or northeast aspect. The suitability of the five conifer species available for nesting were examined and rated. Nest tree characteristics and features of nesting biology from three murrelet nests found in 1990 and 1991 were also evaluated.

Plans for the 1992 field season include additional surveys on the Olympic Peninsula, southern Washington Cascades, and southwest coastal areas in order to fill in gaps in knowledge of the distribution and abundance of murrelets in these areas. In addition, we will continue to measure the forest structure at all sites in order to better define exactly what the structural features of the forest form important components of murrelet habitat. We plan to add many sites in the Sitka Spruce Zone and sites with higher compositions of Douglas fir, and compare the abundance of murrelets in these stands to stands in the Western Hemlock Zone, Silver Fir Zone, and Mountain Hemlock Zone. A comparison of the structure and form of all conifer species available for use by the murrelet in Washington State will then be made and their general suitability in providing murrelet habitat analyzed. In addition, nest searches will continue and any nest located will be monitored by video cameras to gather additional information on nesting ecology. We are now attempting to begin a pilot study on the use of surveillance radar as a technique to survey for murrelets. If applicable, radar may enable us to survey 100 times the area of a single ground-based observer.

Oregon

Oregon Cooperative Wildlife Research Unit - S. Kim Nelson

In 1991, five Marbled Murrelet tree nests were found in old-growth and mature coniferous forests of the Oregon Coast Range. Nests were located through intensive dawn surveys designed to monitor single silent birds flying through the canopy. These nests were found on large limbs of Douglas fir and Sitka spruce trees >300 years in age and >172 cm in diameter. These characteristics were similar to two nest trees found in Oregon in 1990 and other murrelet nests in the Pacific Northwest. Two of the five nests were successful; the others failed because of predation. S. Kim Nelson (P.I.), Janet G. Hardin, Mandy Hubbard, Steve Williamson, John Megahan, and Ray Rainbolt were involved in this study.

The characteristics of the nest stands are currently being analyzed. Nest sites are being compared with random sites to look at habitat preferences. Results from the seven Oregon nests will be compared with five Washington nests in an on-going cooperative effort with Tom Hamer and Karen Holtrop.

Behaviors and vocalizations of murrelets were monitored at nests and in occupied stands in 1991 and 1992. An analysis of behaviors and vocalizations is currently in progress.

In 1992, we plan to conduct a pilot study to address the effects of stand size, habitat characteristics, and landscape patterns on Marbled Murrelet occupancy in inland forests. The pilot study will focus on small, isolated stands in order to evaluate variation in the data and test study methods. Existing data on murrelet-occupied sites will be analyzed simultaneously to evaluate data variation, sample sizes, habitat characteristics, and landscape fragmentation. Between 1993 and 1996, surveys will be conducted in all habitat types (small to large and isolated to contiguous) to determine Marbled Murrelet habitat preferences. Projects such as nest searches, monitoring of murrelet behavior, land-based counts of murrelets along the coast, and recording of murrelet vocalizations will continue during 1992.

California

Santa Cruz County Museum of Natural History - Steve Singer

The first Marbled Murrelet nest in a Coast Redwood tree was documented in Big Basin State Park in 1991. The nest was in a large virgin tree located in an old-growth redwood-Douglas fir stand with a canopy closure of 40%. The nest was unique in that it occurred on a branch lacking any moss or lichens and was located in the crotch formed where the branch joined the trunk.

The nest tree was discovered on the apparent date of incubation initiation and was watched for its duration. To avoid attracting predators to the nest site, the tree was not climbed while the nest was active. On the night of 3 July, 1991, at exactly 22 minutes after sunset, we observed the chick fledge from the nest. This was the first successful fledging to be documented in California, and it occurred in spite of the fact that the nest was located in an area of the park heavily utilized by visitors. In addition, the nest location was known to a resident pair of Stellar's Jays.

Flight behavior and vocalizations occurring near the nest were recorded for future analysis. Collaborators in this research effort were David Suddjian, Stephanie Singer, Rod Norden, and members of the Santa Cruz Bird Club.

A second research study designed to identify, describe, and categorize the in-stand vocalizations of Marbled

murrelets is proceeding on schedule. Last summer, cooperating researchers in Oregon (S. Kim Nelson), northern California (Brian O'Donnell), and Alaska (Kathy Kuletz) made tape recordings of murrelet vocalizations for comparison to recorded vocalizations in Big Basin State Park, California (Steve Singer). Analysis of these calls and collateral data is in progress; results of this joint research effort will be published in the near future.

U.S. Forest Service, Redwood Sciences Lab - C.J. Ralph and Sherri Miller

Plans for 1992 include both offshore surveys and forest research. We plan to continue our Marbled Murrelet (and all seabird) surveys in the coastal waters of California and southern Oregon, and, in addition to surveys from small boats, we will conduct aerial surveys periodically throughout the breeding season. We plan to continue the survey effort into late August and September. Since there is some indication that 1992 may be a major El Nino, data may be useful in understanding the effects of possible changes in food availability on offshore murrelet distribution.

We will begin a project to examine the relationship between murrelet activity levels and occupancy in a forest stand, and the size and characteristics of the stand. The project is a cooperative effort between several government agencies and the timber industry. Field efforts in 1992 will focus on northern California. The Geographic Information Systems (GIS) will be used for selection of study sites, as well as for data analysis and mapping. We will also look for relationships between inland activity and offshore distribution patterns. In 1993 the project will be expanded to include central California and southern Oregon.

Marbled Murreleteers Ringed in Auke Bay

PSG members Nancy Naslund and John Piatt were married March 13th 1992 on the shores of Auke Bay, Alaska. Gus VanVliet, also a PSG member, ringed the two under a special permit authorized by the state. The honeymoon began the at 3 a.m. the morning of the 14th, when the newlyweds went out for a predawn watch of Marbled Murrelets in the forests of Douglas Island. John and Nancy are currently living in Anchorage, Alaska.

Minutes from a Meeting of the Pacific Seabird Group's Marbled Murrelet Technical Committee, 17 January 1992, Charleston, Oregon

The meeting began in conjunction with the Conservation Committee since concerns over continuing impacts of the *Exxon Valdez* oil spill were of interest to both groups. The committees then separated to discuss other pertinent matters of concern. The Marbled Murrelet meeting was facilitated by Rebecca Goggans, Oregon Department of Fish and Wildlife.

The meeting began with a brief account of recent and continuing research in Alaska and British Columbia not presented in the paper or poster sessions. The remainder of the planned agenda was scanned, and, due to time constraints, items of primary and immediate importance were selected for discussion.

I. ADMINISTRATIVE and STRUCTURAL ISSUES

The selection and responsibilities of the Chair were discussed. The suggestion was made that the position title be changed from "Chair" to "Secretariat," which might better describe the function of the person in that role. (However, the term "Chair" remained in use during the rest of the meeting). It was generally agreed that the primary responsiblities of the Chair were to serve as a conduit for information between members/researchers and to disseminate information concerning marbled murrelets to those who request it. The Chair is also a liaison with the Executive Council and the rest of PSG, which requires adherence to certain procedural structures. Following those procedures takes time, and contacting every MMTC member before the Chair takes a given action is unwieldy and impractical when something demands immediate attention. The issue of how independently the Chair can act arises when the conduction of information is perceived as becoming advocacy. Since the issue of pure science vs. advocacy is one of concern to PSG, a decision as to how to resolve these conflicting opinions will be left to the Executive Council and the PSG 2000 Committee.

The question was raised as to how the Chair should be selected. If the Chair were to be appointed by the Executive Council it would facilitate input from outside the committee. However, the Technical Committee can provide a more limiting and refined view of actions needed and adopted, and if the Chair were elected by MMTC members

it would demonstrate support of the entire group for those actions.

Discussion turned to the question of who should be included as members of the Technical Committee — researchers only? Agency managers? People monitoring murrelet activities and populations? This group is becoming quite large as more people become interested and involved in the emerging issues of research and conservation. The suggestion was made that some sort of hierarchy be established, or a series of subcommittees. It was also suggested that the committee have a budget, since dissemination of information costs money. After more discussion the motion was made and passed to form a subcommittee to address these concerns. Kim will appoint several people to come up with ideas and decisions regarding definitions of purpose and responsiblity of the Chair and the group as a whole. Those ideas will be circulated to the rest of the members for their comments.

II. INLAND SURVEY PROTOCOL and MANAGEMENT ISSUES

The protocol currently accepted for gathering data on inland murrelet activity, known affectionately (or otherwise) as "Paton *et al.*," is widely regarded as needing revision after two years of trial and use. Discussion centered on a few core ideas:

* Should different protocols be designed for different objectives? Then we could hand out established, accepted methods to land managers, according to their needs. Examples of objectives are: (A) determination of murrelet presence;(B) determination of murrelet absence in a given area; (C) locating "occupied" sites; and (D) finding nests. Protocols for these objectives could: be separate as listed; combine objectives (A) - (C); or the main (minimum) objective be (C).

* How many visits should be made per season to each site? Should it vary depending on the objective? It was suggested 10 visits should be made to an area where research is being conducted.

* How sure do we want to be that we are not making mistakes in judgement in decisions concerning any particular site?

* How do we account for regional differences? Light levels vary with latitude so relating start time to time of legal sunrise may vary. Also, murrelets may be detected farther inland at higher latitudes.

It was decided to set up a subcommittee to rev the protocol. MMTC members not on the subcommitte submit their comments to the subcommittee in writing was also suggested that a representative of the Fo Service familiar with inland survey techniques be on subcommittee.

The question was also posed as to whether p ceived problems are with the protocol or with interpreta of the data it produces.

The following suggestions were obtained from age personnel (USFS, USFWS, BLM) present at the Marb Murrelet Technical Committee Meeting:

—We want behavioral guidelines right now. D termining the importance of any given site (timber sale) murrelets has proved confusing.

—We can provide you with information and fee back as to how your guidelines and decisions will be view by other non-biologists within these agencies who also ha claims on forest resources.

—We need to know how to determine how muc territory should be surveyed—such as distance from saltwa ter—in order to make best use of limited funds and perso nel.

—We want to know how many surveys per site giv the best or most acceptable odds for correctly identifying whether a site is occupied by murrelets.

—We would like to have information on tolerance of various types of disturbance. How wide a buffer is needed around occupied sites?

III. OTHER MANAGEMENT ISSUES

There is some difference of opinion regarding whether this committee should be involved in drawing up interim management guidelines. Discussion of revisions of the current guidelines was tabled until the topic could be addressed later today by the PSG 2000 Committee.

We continue to be frustrated by the fact that much data collected in Alaska is tied up in the *Exxon Valdez* litigation process and unavailable to fellow researchers. It was decided to take the issue to the PSG business meeting (as New Business) re: requesting a release of information.

It has been suggested that the listing of the Marbled Murrelet as Threatened in the Lower 48 might result in increased logging of murrelet habitat in Alaska. It was suggested that an issue paper be released. Kathy Kuletz has volunteered instead to design an informational brochure on murrelets and their habitat.

. FUTURE RESEARCH

The question was raised as to whether we should ake a list of future research needed. It was pointed out that e former list of Research Priorities (circa 1989) is not ing used right now anyway.

The current "Nest Site Sampling" protocol also eds revision. A working group will be formed to revise it.

Regarding a separate protocol for ground searches murrelet nests: another working group will be formed to ite a list of guidelines.

. ANNUAL MEETING OF THE TECHNICAL COM-ITTEE

It was suggested that an entire day be set aside each ar for this meeting, rather than just a couple of hours when erhaps other committees of interest (Conservation) are lso meeting. There was a difference of opinion as to when is should occur. The current plan is to schedule the eeting as a day added to those of the PSG conference as a hole — at least for next year, in Seattle.

NOTE: There will be two (2) MMTC meetings in e upcoming year. One will be held in the Fall of 1992, obably in Portland, Oregon, and the second will be held on e 8th of February 1993 in Seattle, Washington, the day efore the PSG Annual Meeting begins (9-13 February 993).

I. WORKING GROUPS

Following is a list of the working groups formed uring the meeting. The Chairs of each group will be esponsible for contacting the other group members and etting the necessary tasks completed. The Chairs will also e responsible for notifying S. Kim Nelson, Chair of the MTC, of the group's activities.

If for some reason you do not want to be part of a roup you were assigned to or volunteered to participate in, lease let Kim know ASAP. Also if you would like to articipate in the activities of a group, please contact Kim SAP so your name can be added to the committee list.

Chair duties, objectives and Membership of MMTC — Kim Nelson (Chair), Lora Leschner, Harry Carter

Survey protocol revision — C.J. Ralph (Chair), Kim Nelson, Steve Singer, Kathy Kuletz, Tom Hamer, Meg Shaughnessy, Sarah Madsen (USFS Representative)

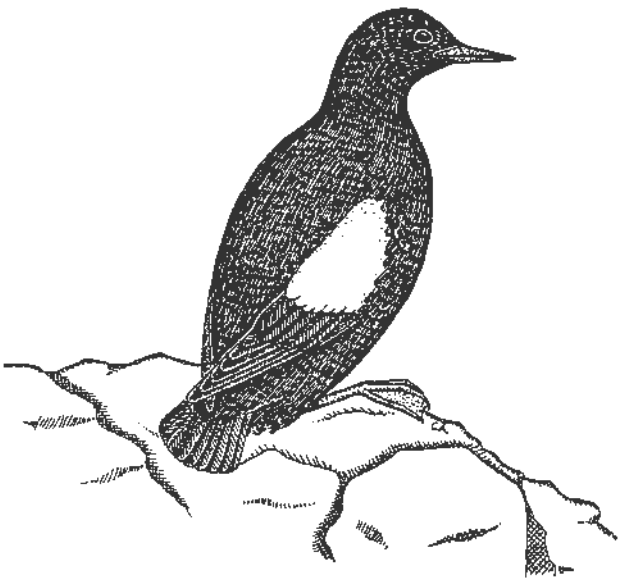
Nest site sampling protocol revision — Tom Hamer (Chair), Kim Nelson, Kathy Kuletz, Janet Hardin, Steve Singer, Dan Varoujean

Nest search guidelines — Nancy Naslund (Chair), Kim Nelson, Irene Manley, Tom Hamer, Janet Hardin, Stephanie Singer

Disturbance accounts/records — Fred Sharpe (Chair), Kim Nelson, Irene Manley, Nancy Naslund, Sherri Miller, Janet Hardin

Educational brochure— Kathy Kuletz (Chair), Fred Sharpe, Janet Hardin

Minutes taken by Janet Hardin



Conservation Committee Report

About fifty people attended the Conservation Committee meeting during the annual PSG meeting at Charleston, Oregon. Such high interest was gratifying to see! Information on some of the topics discussed and more recent developments are listed below by topic:

Drift-nets: Good news! A United Nations resolution was passed that mandates a 50% reduction in the use of high seas drift-nets by June and a total ban by 1993. Japan, South Korea, and Taiwan, the countries most resistant to the ban, have agreed to comply. PSG and many other organizations have been very concerned about the huge morality to seabirds and other wildlife from the high seas drift-net fisheries. Over the years, PSG has sent many letters on the topic.

There is still a concern that smaller drift-nets, not banned by the U.N. resolution, may pose a threat, but most observers feel shorter nets will be uneconomical. Also, pirate boats illegally fishing salmon and other species could become more active. An increase in the long-line fishing techniques may also cause seabird morality, particularly to albatross.

Brochures: *Enjoying Alaskan Seabirds"* is being printed by Chevron, U.S.A. through arrangements by the Nature Conservancy. Five thousand copies, printed on recycled paper, should be available in May of this year. The brochure is meant as an educational tool to teach people about proper etiquette and disturbance problems at seabird colonies. It was a cooperative project between PSG and the U.S. Fish and Wildlife Service (FWS). Brochures can be obtained by contacting the Alaska Maritime National Wildlife Refuge, 2355 Kachemak Bay Dr., Homer, AK 99603.

A similar brochure for Baja, Mexico is being worked on by PSG members. A draft has been completed, but editing and arrangements for printing need to be done. PSG original plan was to make a series of brochures that covered the entire West Coast. At the moment, no one is working on brochures for California, Oregon, Washington, or British Columbia. With the Alaskan brochure finished and the Baja brochure well under way, perhaps someone in PSG will be inspired to start ones for other areas.

Several PSG members were involved in reviewing *Fisherman's Quick Reference Guide - Seabird Protection*, a card outlining do's and don'ts for sport fisherman to follow to avoid problems with seabird hooking, etc. The card is meant for use along the California coast and is available from the California Department of Fish and Game.

Russian Memberships: Dramatic changes have t place in East-West relationships in the last year. A Annual Meeting, it was decided that PSG should m stronger contacts with the Russians, particularly those wo ing on seabirds in the Russian Far East. Several peo contributed toward five complementary PSG members for Russian seabird scientists. Summaries of Russian bird work in the Far East are also to be added to the P Alaskan regional reports.

U.S. - Russian Parks/Refuges: A Beringia Internatio Park and World Heritage Site has been proposed for Bering Straits area between Alaska and the Russian East. The National Audubon Society is the primary U organization working on this effort. An international m rine wildlife refuge for the protection of seabirds and mar mammals may also be considered. Initial talks between Russian government and the U.S. Fish and Wildlife Serv have already taken place to consider options.

Exxon Valdez Oil Spill: In March 1989, the oil tan *Exxon Valdez* ran aground on Bligh Reef, Prince Will Sound, Alaska. About 11 million gallons of crude oil spil and an estimated 300,000 to 645,000 seabirds were kil the biggest recorded seabird mortality due to an oil sp The State of Alaska and U.S. government concluded an ou of-court settlement for criminal and civil damages wi Exxon in October 1991. Exxon is obligated to pay o billion dollars in damages over the next ten years. T settlement provides an extraordinary opportunity to addr restoration of damaged marine resources.

PSG has sent several letters and given testimo advocating the wise expenditure of these funds and encou aging the release of scientific data, which has largely be withheld due to legal concerns. We have supported t acquisition and protection of seabird habitat. Areas in a near the spill have tracts of old growth forest (import Marbled Murrelet habitat), which is scheduled to be logg unless protected. Also a number of seabird colonies a some tidelands are privately owned and could be purchas We also strongly advocate the removal of introduced pred tors, such as rats and foxes, which have desimated seab populations in several areas. The Trustees (three Alas State and three Federal officials) will make all decisions how this money is spent. An Advisory Group represent various interests is also being formed. PSG has request seat on this group and hopes to find an Alaskan mem would could serve to review proposals and attend meetin

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PSG has sent several letters and given testimon advocating the wise expenditure of these funds and encou aging the release of scientific data, which has largely bee withheld due to legal concerns. We have supported th acquisition and protection of seabird habitat. Areas in an near the spill have tracts of old growth forest (importa Marbled Murrelet habitat), which is scheduled to be logge unless protected. Also a number of seabird colonies an some tidelands are privately owned and could be purchased We also strongly advocate the removal of introduced preda tors, such as rats and foxes, which have desimated seabir populations in several areas. The Trustees (three Alask State and three Federal officials) will make all decisions o how this money is spent. An Advisory Group representin various interests is also being formed. PSG has requested seat on this group and hopes to find an Alaskan membe would could serve to review proposals and attend meetings

dangered Species: The U.S. Endangered Species Act is for reauthorization and should be one of the major vironmental battles of the year. Status of some seabird cies of interest to PSG are:

rcourt's Storm-petrel: PSG has sent information con-ming the status of Harcourt's Storm-petrel (*Oceanodroma ttro*) recommending it for listing as an endangered spe-s. No response to our letter or action on the proposal for ing has occurred to our knowledge.

ntus' Murrelet: At the annual meeting, concern was pressed about the Xantus' murrelet (*Synthliboramphus poleucus*). Recent censuses in southern California show w populations. Information from Baja, Mexico is less mplete. PSG members were divided on whether or not re is sufficient information at this time to consider listing s species.

ectacled and Steller's Eider: The Spectacled (*Somateria cheri*) and the Steller's Eiders (*Polysticta stelleri*) are ders that nest in Alaska and the Russian Far East. U.S. sh and Wildlife Service (FWS) survey data show that ectacled Eiders have declined from about 100,000 to just ,000 in Alaska. Steller's Eiders were once considered a mmon species nesting on the Yukon-Kuskokwim delta of laska, but are now thought to be extinct in that area. The orth American population is now apparently restricted to small area near Point Barrow and is considered rare in the kutsk Republic of Russia, the center of the world breed-g range.

Reasons for the declines are unknown. Some of the ossible factors which could be contributing are increased ortality due to overharvesting, predation, habitat change, eather, reduction of food supply, and/or development ctivities. The FWS is proposing that the Spectacled Eider e listed as a threatened species, but has decided that eller's Eider be precluded from the listing due to higher iorities.

Seaducks are species that have not been monitored s intensively as most other ducks. The FWS conducted a orkshop on Spectacled and Steller's Eiders last year and n other seaduck species in general this spring to compile vailable information and plans for future data collection. here is concern that declines of other seaduck species and e lack of basic data may also apply to the other eider ecies, scoters, and harlequin ducks.

lide Exchange: As part of the annual meeting the conser-tion committee conducted a slide viewing and duplicate ordering session. Some 387 slides of seabirds, colonies, and related issues were shown and some 1,300 duplicates ordered. The most popular topics were the *Exxon Valdez* oil spill, drift-net morality, and other conservation topics. It is hoped that this service will provide PSG members with better slides for public programs and scientific presentations. Also money was raised for the PSG treasury in the process.

Palmyra Atoll, Hawaii: Development plans may threaten this seabird island. PSG Hawaiian Island members are monitoring negotiations between the developer and the U.S. Fish and Wildlife Service to see what actions PSG could take to help protect this habitat. Acquisition of the island for refuge status has been proposed.

Cormorants, San Francisco Bay: Double-crested Cormorants have colonized many of the bridges in San Francisco Bay in recent years. Concerns about disturbance to these birds from activities such as bridge painting and dangers of falling nest material onto vessels were discussed at the annual meeting. PSG members with special knowledge on the area are drafting a letter expressing our concerns to the California Transportation Department.

Marine Sanctuaries: Several new Marine Sanctuaries are being considered along the West Coast of the United States. These include Monterey Bay in California, Olympic Coast and Northern Puget Sound in Washington State, and Kahoolawe in Hawaii. PSG has provided information in support of the Monterey Bay proposal and has advocated including the Northwest Hawaiian Islands and Kauai's north shore to the Kahoolawe study.

Little PSG action has been done related to the Washington proposals. Any members with knowledge and interest in that area have an opportunity to contribute. The Center for Marine Conservation publishes a special newsletter on the status of Sanctuary proposals. If you are interested in getting on their mailing list or need the most recent news about a proposal, contact their office @ (415) 391-6204.

There are no Marine Sanctuaries in Alaska or likely proposals that may be approved. PSG is considering nominating the Pribilof Islands for sanctuary status if support from the local Aleut communities can be assured. It is felt that without full local support there is no hope for approval.

Alien Predators: Introductions of rats, foxes, cats, and other alien animals to seabird islands have caused more damage to island flora and fauna than probably all other

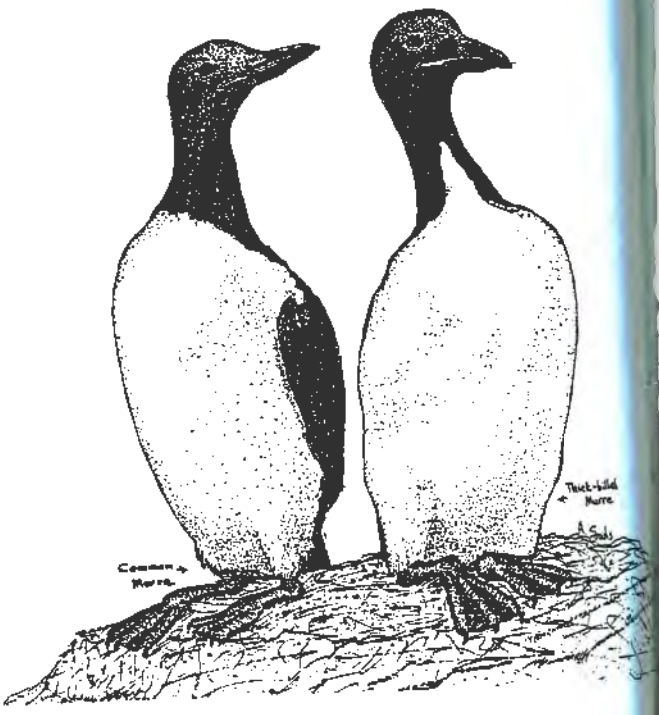
disturbances combined. At the Annual Meeting, discussions by the Conservation Committee again emphasized that control and elimination of introduced species should be the primary emphasis of the PSG conservation work.

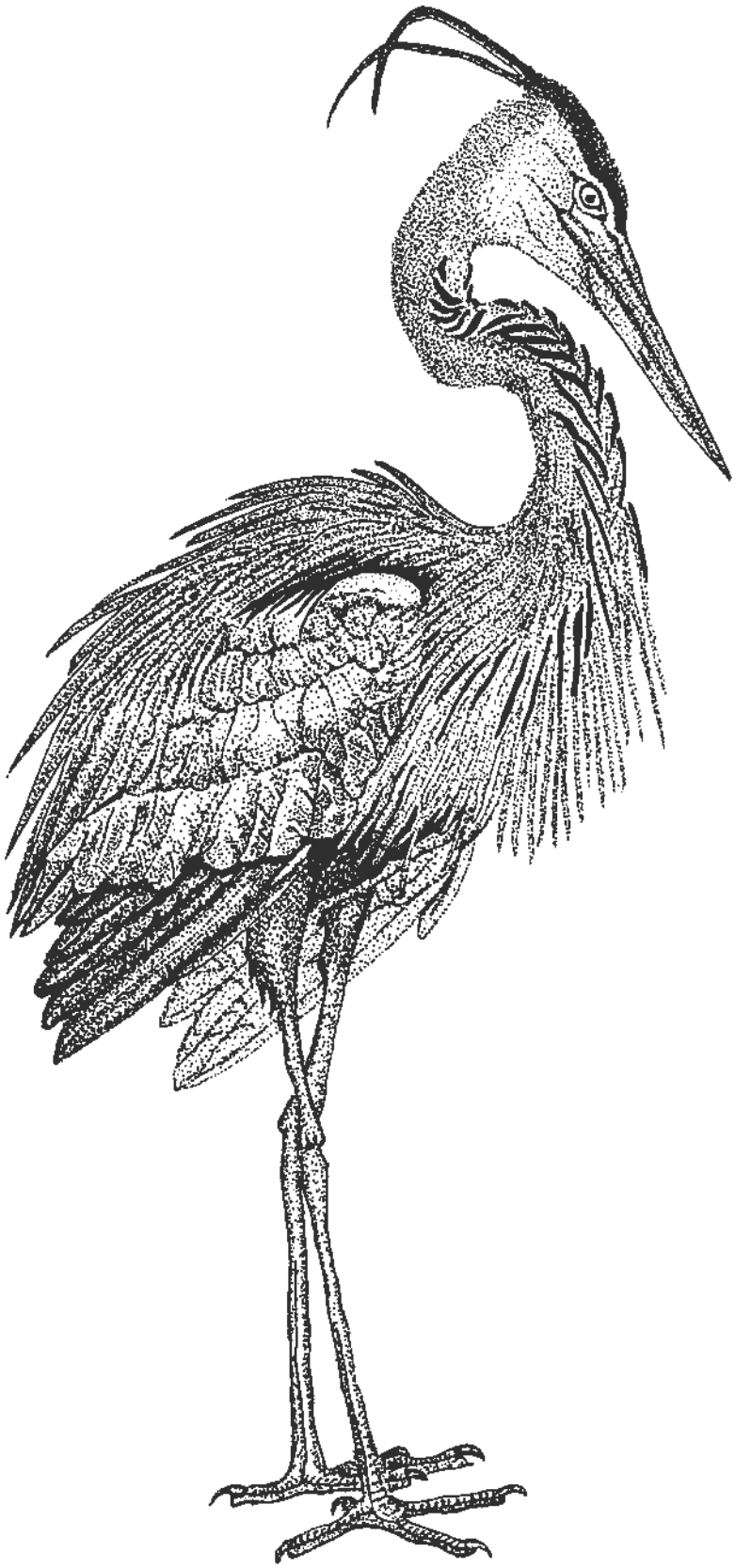
PSG has recently sent letters encouraging the Fish and Wildlife Service, Alaska Office to increase its efforts at removal of introduced foxes on seabird islands. Even the small amounts of funding normally available for this work are in danger of being eliminated this year. PSG also advocates the use of Exxon restoration monies (see below) for removal of alien animals in Alaska.

The possibility of rat introduction from shipwrecks to pristine island colonies is an ever present danger. In October 1991, a Korean grain ship went aground near one of the Shumagin Islands, Alaska. It was a likely candidate for rat infestation; however, its distance from land and the current conditions made escape of rats to seabird islands unlikely. In January, a rat was seen climbing down a ship line at St. Paul harbor in the Pribilof Islands. The Pribilofs are world famous as home to hundreds of thousands of seabirds and marine mammals. PSG feels that a emergency plan and team needs to be available to quickly respond to such problems, and measures need to be strengthened to preventi introductions of rats.

Conservation Chairman: PSG has changed the "Conservation Chairman" title to "Vice-Chair for Conservation." This measure was taken to further highlight the importance PSG gives to conservation issues. Craig Harrison has been elected as the first person in this new title. Craig, a past PSG Chair, has had considerable field experience with seabirds in both Alaska and Hawaii as a biologist for the U.S. Fish and Wildlife Service. He is the author of several scientific papers on seabirds and the book *Seabirds of Hawaii: Natural History and Conservation*. He is now a Washington D.C. lawyer, but maintains his interest in marine conservation. I am very glad that Craig is moving into this position and hope that all PSG members give him as much help as they can.

Art Sowls





PRELIMINARY ANALYSES OF SEABIRD AFFINITIES IN THE GULF OF FARALLONES. David G. Ainley (Point Reyes Bird Observatory, 4990 Shoreline Hwy, Stinson, CA 94970), Sarah Allen Miller (Depart. Wildl. Res. Sci., U.C., Berkeley, CA 94720), and Christine A. Ribic (USEPA Envir. Res. Lab., 200 SW 35th St., OR 97333)

Marine resource managers increasingly require sophisticated methods to analyze abundance and spatial distribution of marine animals. A geographic information system (GIS) is a powerful tool for analyzing spatial relationships. Our objectives are to 1) map seabird distribution and abundance in the Gulf of the Farallones based on at-sea surveys, 1985-1991 2) characterize the ecological relationships of seabird distribution/abundance and environmental variables by a) simple overlay with GIS and habitat variables such as bathymetry and breeding sites, and b) multivariate analyses such as Canonical Correspondence Analysis (CCA). Preliminary results indicate that seabirds displayed strongest affinities for depth of water and distance to land for most years.

REPRODUCTIVE ECOLOGY OF KITTIWAKES ON BUILDIR ISLAND, ALASKA. Colleen M. Baggot (US Fish and Wildlife Service, DEC-330 ARLSQ 4401 N. Fairfax Drive, Arlington, VA 22203).

The reproductive ecology of Black-legged Kittiwakes (*Rissa tridactyla*) and Red-legged Kittiwakes (*Rissa brevirostris*) was monitored on Buldir Island, Alaska in 1988. Phenology of nesting events was earlier and overall productivity lower for Black-legged Kittiwakes versus Red-legged Kittiwakes. Use of the logistic equation for chick growth analysis revealed no significant differences between the two species. However, examination of the linear portion of the growth curve indicated that growth rates of Red-legged Kittiwake chicks were significantly slower than their counterparts. Early phenology and high levels of egg production suggest that food availability was high early in the breeding season. However, the failure of Black-legged Kittiwakes to raise more than on chick, coupled with low growth rates and low productivity for both species, may be the result of food shortage during the chick-rearing period.

HYBRIDIZATION IN THE WESTERN GULL/GLAUCOUS-WINGED GULL COMPLEX. Douglas A. Bell (Museum of Vertebrate Zoology, University of California, Berkeley, CA 94720).

The Western Gull (*Larus occidentalis*) and the Glaucous-winged Gull (*Larus glaucescens*) hybridize in a region of sympatry extending from Juan de Fuca Straight, BC/WA, South to Coos Bay, OR. To study the pattern of hybridization, I investigated intra-and interspecific variation in protein electrophoretic, morphometric, and colorimetric characters, using specimens collected at colonies located throughout each species' breeding range. In addition, selected aspects of pairing behavior and reproductive success were analyzed. Gene flow across the hybrid zone appears to be asymmetric, with introgression skewed towards the Glaucous-winged Gull. Morphometric variation in the two species is very similar. Colorimetric characters exhibit intra-and interspecific clinal variation. Plumage and soft part colors serve as the "best" discriminators of pure and hybrid gulls. Mate choice is significantly assortative. Based on analyses of clutch size and egg volume data from 42 mated pairs in the hybrid zone, it appears that Western gulls had greater reproductive success in 1989 than hybrids or mixed pairs, and these in turn had greater reproductive success than Glaucous-winged gulls. Since the early 19[illegible] the hybrid zone has expanded, yet its mid-point has remained stable and there appears to have been a shift in hybrid frequency away from F_1 phenotypes.

CHRONIC PETROLEUM POLLUTION OILS MAGELLANIC PENGUINS (Spheniscus magellanicus) IN ARGENTINA. P.Dee Boersma (Institute for Environmental Studies and Department of Zoology, University of Washington, Seattle, Washington 98195), Patricia Gandini, Estaban Frere, Tomas Holik, and Victoria Lichtschein (EcoBios and Wildlife Conservation International, Bronx, New York 10460).

Major oil spills are known to kill large numbers of seabirds. Our data show that from 22% to 66% of the Magellanic penguins found dead along the coast of Chubut, Argentina in March are covered with oil. No major oil spills have been reported in the area during this time although chronic oil pollution is widespread. Chronic oil pollution is probably a more important cause of seabird death than previously realized and may be a significant factor in the decline of some populations. More penguins are oiled in the South of Argentina near oil ports than are oiled farther North where there are no exporting oil ports. Oiled penguins were more likely to be found on points than in coves and recent fledgling were more likely to be oiled than adults.

DECLINE OF MAGELLANIC PENGUINS AT PUNTA TOMBO, ARGENTINA. P. Dee Boersma* (Institute of Environmental Studies and Department of Zoology, University of Washington, Seattle, WA 98195) and David Stokes (Department of Zoology, University of Washington, Seattle, WA 98195).

Magellanic penguins apparently colonized the coastal areas of Chubut, Argentina in the mid-1900's. The population of penguins at Punta Tombo was estimated at around 200,000 breeding pairs in the late 1960's. We began twice yearly

veys of the colony in 1987. The population appears to be decline. The proportion of penguins that are single or red has not varied among the years but the number of ive nests and number of penguins have decreased. The mber of active nests has declined by nearly 30% from tober 1987 until October 1991. The population has clined in each of the last 4 years. This decline does not pear to be explained by natural variability. The decline y be caused by chronic oil pollution caused by the scharge of oily ballast water along the Patagonian coast.

VING DEPTHS AND UNDERWATER FORAGING N RHINOCEROS AUKLETS. Alan E. Burger and onald Garnier (Biology Department, University of Victoria, ictoria, B. C., Canada V8W 2Y2).

iving depths of Rhinoceros Auklets *Cerorhinca onocerata* were measured using maximum depth gauges d time-at-depth recorders at three islands in British Co-mbia. The deepest dive was to 65 m, but most birds raged intensively in the upper 20 m. Prey delivered to icks varied significantly between islands. Common prey sh were *Ammodytes hexapterus*, *Hypomeseus pretiosus*, *Clolabis sairi*, and immatures of *Clupea harengus*, *Inchorhyncus* spp., *Sebastes* sp., and *Hexagrammos ecagrammus*. Variations in the composition of prey loads re discussed. Analysis of bite-marks indicates that most rey were captured from below, and this is supported by ield observations.

THE RECENT STATUS OF RED-LEGGED KITTIWAKES: IS THERE REASON FOR CONCERN? G. Vernon Byrd (U.S. Fish and Wildlife Service, Box 5251 NAS, Adak, AK 98791).

Red-legged kittiwake (*Rissa brevirostris*), a rare seabird confined to four nesting locations in the Bering Sea, has recently declined at its major breeding colony, St. George Island. Furthermore, extremely low productivity has been recorded in most years during the past decade. Available data from St. George I., and the other breeding locations are evaluated to consider whether there is reason for concern about the status of this species.

THE EFFECT OF BROOD SIZE AND FOOD SUPPLEMENTATION ON ADULT AND CHICK BEHAVIORS IN GLAUCOUS-WINGED GULLS (*LARUS GLAUCESCENS*). Dean A. Cabansag and Ronald L. Carter* (Dept. of Natural Sciences, Loma Linda University, Loma Linda, CA 92350)

In a colony of Glaucous-winged Gulls, 83 territories were manipulated into one of four brood size categories: 1-chick, 3-chicks, 6-chicks, and 9-chicks. In addition, approximately one half of the territories in each size category were provided with food supplementation for the first two weeks after chick hatching. Data on chick survival, adult attendance on territory, and frequencies of adult and chick behaviors were collected over five week period. Chick survival rate, number of adults on territory, adult behaviors (feeding, upright) and chick behaviors (begging, preening, resting, walking) varied significantly with respect to brood size. In food supplemented territories, chick survival, adult attendance on territory and the frequencies of adult and chick behaviors appeared to differ from control territories.

CENSUSING NESTING CALIFORNIA BROWN PELICANS FROM AERIAL PHOTOGRAPHS. Harry R. Carter, Trudy Ingram* (Channel Islands National Park, 1901 Spinnaker Dr., Ventura, Ca 93001), Franklin Gress (Department of Wildlife and Fisheries Biology, Davis, Ca 95616), Gerard J. McChesney, and Deborah L. Jory (U.S. Fish and Wildlife Service, 6924 Tremont Rd., Dixon, CA 95620).

In April, May and June, 1991, we conducted aerial surveys of California Brown Pelicans nesting on West Anacapa Island, California, using either high resolution or 35-mm format cameras. We compared numbers of nests and chicks with counts of the same areas made from traditionally-used island observation points. Initial results indicate that 20-30% more occupied nests and chicks are visible from high resolution photos compared to those observed from the ground. Similarly, we counted about twice as chicks in one area from standard photos compared to those counted from the island, although the total nest count for this site was nearly identical for both methods. We discuss logistical problems, disturbance issues, costs, and potential sources of error for each method.

BREEDING POPULATIONS OF SEABIRDS IN SOUTHERN CALIFORNIA. Harry R. Carter*, Gerard J. McChesney, Darrell L. Whitworth, David B. Lewis, and Deborah L. Jory (U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, 6924 Tremont Road, Dixon, CA 95620).

In 1991, we surveyed all colonies of 13 species of seabirds between Pt. Conception and the Mexico border, especially in the Channel Is. This area was last surveyed completely in 1975-1978 by Univ. of Calif. Numbers of Brown Pelicans, cormorants(Double-crested, Brandt's, and Pelagic), Black Oystercatchers, Western Gulls, and Pigeon Guillemots were several times high than found previously. Many new, small colonies were found mainly at Santa Cruz, Santa Rosa, and Santa Catalina islands. Tufted Puffins have recolonized Prince Island (where the last recorded nesting was in 1913) and Rhinoceros Auklets have colonized the northern San Miguel Island area for the first recorded time. Upward trends reflect true increased and more thorough surveys.

Abstracts. . .

THE EFFECTS OF AGE AND TIMING OF BREEDING ON THE REPRODUCTIVE SUCCESS OF THE THICK-BILLED MURRE, *Uria lomvia*. Leah N. de Forest (Department of Biology, University of Ottawa, Ottawa, Ontario, Canada).

I followed the reproductive success of >450 pairs of Thick-billed Murres (*Uria lomvia*) on Coats Island, N.W.T. in 1990 and 1991. Although egg laying was highly synchronous, there was a seasonal decline in hatching and reproductive success. there was no corresponding seasonal decline in fledging success. Younger birds (3, 4 and 5 year olds) laid later than older birds (>7 years). A sample of early laying birds were induced to relay their eggs 14 days later. This experimental group had significantly higher success than naturally late laying birds, and also greater success than young birds that laid at an earlier date. The experimentals were not significantly different from a control group of early laying birds, suggesting that age and experience increase the likelihood of succeeding even late in the season, when overall reproductive success is otherwise low.

AGE OF RECRUITMENT AND RECRUITMENT POTENTIAL IN RELATION TO NEST-SITE AVAILABILITY IN THE BLACK GUILLEMOT. George J. Divoky (Institute of Arctic Biology, University of Alaska, Fairbanks, Alaska 99775).

Since 1975, all Black Guillemots fledging from a man-made colony in northern Alaska have been banded. Creation of nest-sites has allowed examination of age of return to natal colony, age at first breeding, and the percentage of each cohort recruited into the breeding population in relation to nest-site availability. Mean age of first capture as an adult was 3.3 years and showed no significant variation by cohort. 1975-79 cohorts returned when there was a surplus of nest-sites and had a mean age of first breeding of 3.7 years (range 2-8); 86 percent of the 49 returnees entered the breeding population. Individuals that fledged from 1980 to 1985 were primarily limited to occupying vacancies created by the mortality of breeding birds and had a mean age at first breeding of 4.9 years (range 2-9); 36 percent of the 180 returnees from those cohorts entered the breeding population.

PARENT-YOUNG COMMUNICATION AND RECOGNITION IN THE GLAUCOUS-WINGED GULL (*LARUS GLAUCESCENS*). Daniel Durr (Dept. of Biology, Walla Walla College, College Place, WA 99324), Ronald L. Carter* and J.G. Galusha (Dept. of Natural Sciences, Loma Linda University, Loma Linda, CA 92350).

Adult gulls regularly used long calls, mew and malp calls when on territory with their chicks. Chicks most often used the peer call. Experimentation showed that adults called more quickly after the playback of the chiz call of their own chick than that of another chick. Resident chicks called more often when inside an opaque container on their territory than when on another territory, presumably in response to the calls of their parents.

WITHIN AND AMONG-YEAR NEST SITE SHARING BY FIVE SEABIRD SPECIES AT ISLAS LOS CORONADOS, BAJA CALIFORNIA, MEXICO. William T. Everett (Western Foundation of Vertebrate Zoology, 110 Glendon Avenue, Los Angeles, California 90024

During a 1989-1991 study, underground nest sites at Islas Los Coronados were occupied by three species of Storm-Petrels (*Oceanodroma melania, O. leucorhoa,* and *O. homochroa*) and two species of alcids (*Synthliboramphus hypoleucus* and *Ptychoramphus aleuticus*). One of the sites studied was used sequentially by three different species in the same year. Another site was occupied by four species during 3 successive years. Use of the same site by two species during the same year was not uncommon. Alcids occupied sites early in the Spring, and after their young fledged the sites were taken over by Storm-Petrels. Some sites were occupied for nine months of the year.

VOCAL RECOGNITION BY LITTLE PENGUINS (*Eudyptula minor*) ON PHILLIP ISLAND, VICTORIA, AUSTRALIA. Janey Fadely* (217B Owen Street, Santa Cruz, CA 95062) and Peter Dann (Penguin Reserve, PO Box 403, Phillip Island, Australia 3922).

Playback experiments were conducted to test whether Little Penguins recognize one another on the basis of vocalizations. Cardiac changes were monitored in response to mate and non-mate calls to test for recognition between mates. Changes in mean and peak heart rate (HR) were significantly greater following non-mate calls, indicating vocal recognition occurred. Differences in HR were statistically significant for males and females. Recognition of adults by chicks was tested by monitoring chick movements in response to playback of parent and non-parent mutual vocalizations. Although chicks responded indiscriminately when young, chicks older than 5 weeks demonstrated recognition of parent calls.

CONSTRAINTS OF GLAUCOUS GULL PREDATION WITHIN A THICK-BILLED MURRE COLONY. Grant Gilchrist (Department of Zoology, 6270 University Boulevard, Vancouver, B.C., Canada V6T 2A9)

In the eastern arctic, Glaucous Gulls (*Larus hyperboreus*) nest within Thick-billed Murre (*Uria lomvia*) colonies and are the primary predator of murre eggs and chicks. This study examined possible constraints on gull foraging within a murre colony on Coats Island, N.W.T., Canada. Through

perimental egg placements and behavioral observations, conclude that ledge accessibility, high murre nesting nsity, and communal defense by murres restricted gull aging efficiency. Further, gull foraging activity was sitively correlated to wind speed. I suggest that gulls eferentially foraged under windy conditions to overcome e constraints of ledge inaccessibility, high murre nesting nsity, and communal defense. Apparently, high wind eeds enabled gulls to access narrow ledge, low density urre nest sites.

NCIDENTAL CATCH OF MARINE BIRDS IN HIGH EAS DRIFTNETS. Patrick J. Gould, Douglas Johnson, erry Shaffer, and Kenton Wohl (U. S. Fish and Wildlife ervice, Region 7, 1011 E. Tudor Road, Anchorage, Alaska 9503 and Northern Prairie Wildlife Research Center, Route Box 96C, Jamestown, North Dakota 58401-9736).

t least 32 species of marine birds have been recorded ntangled in high seas squid and large mesh driftnets of the orth Pacific Ocean. This represents over 40% of the pecies occurring in the fishing areas. Sooty shearwaters *Puffinus griseus)* are the most common species entangled n the nets, and ten other species are caught in moderate umbers. Total incidental catch of marine birds within ese fisheries was estimated at 416,000 in 1990.

URRENT STATUS OF ORGANOCHLORINE LEVELS IN BROWN PELICANS BREEDING IN THE SOUTHERN CALIFORNIA BIGHT. Franklin Gress*, Daniel W. Anderson (Department of Wildlife and Fisheries Biology, University of California, Davis, CA 95616) and Walter M. Jarman (Long Marine Laboratory, University of California, Santa Cruz, CA 95060)

Due to high DDE levels, reproductive success of California Brown Pelicans (*Pelecanus californicus occidentalis*) in the Southern California Bight was greatly reduced in the 1960s and early 1970s. DDE residues in pelicans and their food sources have since declined substantially but remain in chronic low levels. Reproductive rates began improving in 1974 but still average about 35% below that of other populations unaffected by DDE. Nevertheless, numbers of pairs breeding on the Channel Islands have increased to historic high levels during the 1980s; the recovery have been sustained in part by immigration from colonies elsewhere. Mean eggshell thickness is about 15% less than normal, suggesting continued effects of DDE. Reproductive rates since 1974, however, have probably been largely determined by food abundance. Lowered reproductive success may be exacerbated by chronic pollutant levels in times of food stress.

RELATIONSHIP BETWEEN FOREST CHARACTERISTICS AND THE USE OF INLAND SITES BY MARBLED MURRELETS IN W. WASHINGTON. Thomas E. Hamer* (615 State, Sedro Woolley, WA 98284), Eric Cummins and William B. Ritchie (Washington Dept. of Wildlife, 600 Capitol Way N., Olympia, WA 98504).

Surveys for murrelets were conducted using fixed station morning surveys at 54 old growth stands in the North Cascades in 1991. Twenty-nine forest variables were measured in each stand using a 25 meter radius plot. A T-test compared each forest variable between high-use and low-use stands. High-use stands were defined as those sites with greater than 10 detections per morning and having detections on at least 2 of 4 surveys. Stands with high-use were significantly lower in elevation, had a higher percent composition of Douglas-fir, Western Hemlock and Western Red Cedar and a lower percent composition of Silver fir and Mountain Hemlock. The mean DBH, aspect and number of potential nest platforms were all significantly higher than low-use stands. The suitability of the 5 conifer species available for nesting are discussed.

POPULATION STATUS AND TRENDS OF SEABIRDS AND COLONIAL WATERBIRDS IN THE SAN FRANCISCO ESTUARY. Thomas E. Harvey (U.S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA 95825).

Monitoring of populations of breeding seabirds and waterbirds in the Estuary has occurred within the last 10-15 years, however efforts have been inconsistent. The first comprehensive census of seabirds, conducted during 1989-1990 by the USFWS, showed the most numerous species in decreasing order to be California gull, Forster's Tern, Western Gull, Caspian Tern, and Double-crested Cormorant. California Gulls, Forster's, Caspian, and California Least Terns only became established as nesting species following the creation of artificial habitats such as salt evaporation ponds. Species which have shown recent population increased resulting from a similar ability to exploit other man-made features include the Double-crested Cormorant and the Western Gull. However, California Least and Caspian Terns and herons and egrets have recently been documented as experiencing major nesting failure due to predation by introduced red foxes.

ADULT SURVIVAL OF BLACK-LEGGED KITTIWAKES ON MIDDLETON ISLAND, ALASKA.
Scott A. Hatch,* Bay D. Roberts, and Brian S. Fadley (Alaska Fish and Wildlife Research Center, U. S. Fish and Wildlife Service, 1011 E. Tudor Road, Anchorage, Alaska 99503).

Black-legged Kittiwakes in Alaska are notably unproductive (0.31 chicks nest-1) compared with their counterparts in portions of the northeastern Atlantic (ca. 1.0 chicks nest-1). Some colonies are failing chronically (e.g., few or no young produced on Middleton Island, north-central Gulf of Alaska, in 7 of the last 9 years). We measured adult survival rates on Middleton to see if low productivity is offset by longer life in the Pacific. Breeding males averaged 92.3% annual survival in 4 years (12.4 years mean adult life); females averaged 93.8% survival (15.6 years adult life). Recent (1982-85) estimates from one colony in Britain were 60% survival of males (2.0 years adult life) and 65% survival of females (2.4 years adult life). Clearly, Pacific kittiwakes are comparatively long-lived, consistent with their low productivity. The question arised whether differences between Pacific and Atlantic populations reflect an interim tradeoff between breeding effort and survival or genetic differences in life history traits.

NORTHWARD RANGE EXPANSION IN CALIFORNIA BROWN PELICANS.
Deborah L. Jaques*, Daniel W. Anderson (Wildlife & Fisheries Biology, UC Davis, Davis CA 95616), and Roy W. Lowe (USFWS, Hatfield Marine Science Center, Newport OR 97365).

The non-breeding range of Brown Pelicans (*Pelecanus occidentalis californicus*) has recently expanded north along the U.S. Pacific coast. Annual fall aerial surveys of pelican sin Oregon and Washington were initiated by the USFWS in 1987. Fall counts increased from 4,500 to nearly 10,000 birds in 1991. Pelicans concentrated in large estuaries; 64% to 81% of yearly totals occurred between Netarts Bay, OR and Grays Harbor, WA. Willapa Bay, WA was the single most important site.
From 1990 to 1975, no more than 10 pelicans were seen north of the Columbia River in a given year. Brown Pelicans irrupted into Oregon and Washington during the 1982-83 El Nino event, but increased seasonal occurrence north of California first became evident in 1976, along with the beginning of a warm water regime in the California Current System. Range expansion has also coincided with recovery of breeding populations in southern California. We discuss recent and historical changes in non-breeding pelican distribution in relation to breeding colony status, changes in ocean climate, and shifts in distribution of prey species.

THE EFFECTS OF HUMAN DISTURBANCE (TIME ALLOCATION OF NESTING CALIFORN LEAST TERNS (*Sterna antillarum browni*).
Scott Johnston* (US Fish Wild. Serv., Southern. Calif. Field S 2140 Eastman Ave., #100, Ventura, CA 93003 and Bryan Obst. (Dept. Biol., Univ. Calif., Los Angles, Ca 90024)

The effects of human-related disturbance on reproduc success are well documented in colonial seabirds. Ho ever, variation of nesting behavior resulting from hu disturbance is infrequently examined. In 1990 and 1991, studies the effects of human disturbance on adult t allocation at the nest, at two colonies of least terns in S Diego Count, California. The two colonies were subject to different types and amounts of disturbance that inclu monitoring and research teams, and military operati Initial results indicate that there was little difference nesting behavior between the two study sites. Prelimin data from focal animal behavioral studies and the impli tions of colony characteristics on habituation and dis bance will be discussed.

DISTRIBUTION OF MARBLED AND KITTLITZ MURRELETS IN THREE BAYS IN ALASKA.
Kath Kuletz* and John Piatt (U. S. Fish and Wildlife Servi 1011 E. Tudor Road, Anchorage, Alaska 99503).

Early references to life history and distribuation of Kittlitz's Murrelet described the species' preference glaciated waters, but specific information on numbers a distribution within any given area are lacking. We pres results from summer counts done specifically f *Brachyramphus* murrelets. Three bays in Alaska we censused by boat: Kachemak Bay in lower Cook Inlet 1988, Unakwik Inlet in Prince William Sound in 1991, a Glacier Bay in southeast Alaska in 1991. In each are Marble Murrelets (*B. marmoratus*) were distributed throug out the bay in nearshore waters, but the Kittlitz's Murrel (*B. brivirostris*) were concentrated near tidewater glacie and downstream from glacier river outflows. For each of t bays, Kittlitz's Murrelets accounted for 17-20% o *Brachyramphus* murrelets identified to species, but com prised up to 68-92% of the murrelets on transects where the were aggregated. In general, these areas were located ne the heads of bays of inlets, with the exception of Beards Islands in Glacier Bay. There is evidence from Kachem Bay that Kittlitz's Murrelets arrive at their breeding groun later (mid-May) than Marble Murrelets, and from all thr bays that Kittlitz's leave earlier (mid-August) than Marb Murrelets.

STRIBUTION OF MARBLED MURRELETS AT A COMPARED TO OCCURRENCE OF OLD-ROWTH FORESTS IN THE SAN JUAN ISLANDS, ASHINGTON. Lora L. Lechner* (Washington Depart-ent of Wildlife, 16018 Mill Creek Road, Mill Creek, ashington 98012) and Eric B. Cummins (Washington epartment of Wildlife, 600 Capital Way N., Olympia, ashington 98501).

esearchers have speculated that the distribution of Marble urrelets on the water early in the morning may relate to esting areas on shore. To gain more information on urrelet distribution, we conducted marine surveys for arbled Murrelets around two of the San Juan Islands that ad old-growth forests. Murrelet nesting surveys within the orests were conducted simultaneously. Our objectives ere to 1) compare early morning Marbled Murrelet num-ers at sea to murrelet detections within the forest, 2) etermine if there was a change in number of murrelets at ea during the morning or over the breeding season, and 3) etermine if any chicks were observed at sea near potential est habitat. No murrelets were detected on the forest urveys. Low numbers were observed on marine surveys round the largest island and there was no pattern to the istribution of murrelets. There was a pattern in distribution round the second island as well as a difference in the umber murrelets present at dawn versus one hour after awn.

IOMECHANICS AND FORAGING PROFITABIL-TY:: AN APPROACH TO ASSESSING TROPHIC EEDS AND IMPACTS OF BENTHIC-FEEDING IRDS. James R. Lovvorn (Department of Zoology, Uni-ersity of Wyoming, Laramie, WY 82071).

ood availability for benthic-feeding birds is usually mea-ured without regard to effects of water depth or food ispersion on food densities required for profitable forag-ng. I describe a biomechanical model of underwater oco motion in *Aythya* spp., and use the model and field data o es timate foraging costs and minimum food intake rates of Can vasbacks (*A. valisineria*) in two coastal habitats. In-crea sed water depth from 0.5 to 1.5 m increased the nest cost of ti ne spent foraging at the bottom by 43%. Biomechanics, resp irometry, and data on intake rates at different food dens ities are used to calculate minimum food densities for prof itable foraging. Density and dispersion of benthic food ls, before and after the birds shifted between the two habi tats, suggested that the fraction of habitat with food dens ities above a profitability threshold is more critical to Can vasbacks than average food density. Such factors are impo ortant in relating bird energy requirements and benthic sam pling data to carrying capacity and total area of usable habi tats.

MARBLED MURRELETS IN THE WALBRAN VALLEY; INLAND BEHAVIOR AND DISCOVERY OF CANADA'S SECOND NEST. Irene Manley (University of Victoria, P. O. Box 1700, Victoria, BC, V8W 2Y2) and John Kelson (Conservation International Canada, # 5 1147 Newport Ave., Victoria BC, VbS 5E6).

Marbled Murrelet use of the Walbran Valley was studied from March to September of 1991. Intensive forest surveys have documented exceptionally high use of some areas and were used, in combination with tree-climbing, to locate a second nest <200 m from a nest discovered last year. This important area of breeding habitat is currently being logged, illustrating the lack of legislative or other process needed to protect threatened and endangered species in Canada.

STATUS OF THE ASHY STORM-PETREL ON SOUTHEAST FARALLON ISLAND. Gerard J. McChesney* (U.C. Santa Cruz, 1156 High St., Santa Cruz, CA 95064), David G. Ainley, and William J. Sydeman (Pt. Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970).

A capture-recapture study was conducted on Ashy Storm-Petrels (*Oceonodroma homochroa*) on S.E. Farallon Island, California, the world's largest nesting colony, from mid-July to mid-September, 1987. Birds were attracted to and captured in mist-nets at night using tape-recorded calls of both Ashy and Leach's (*O. leucorhoa*) Storm Petrels. The computer program "CAPTURE" was used to analyze the capture data and estimate population size. We banded and released a total of 611 Ashy Storm-Petrels. Of these, only the 496 probably breeders were used in the analysis. The population estimate was 1372 breeding birds, with an approximate 95% confidence interval of 1145-1599 birds. This is considerably less than the past estimate of 4000 breeding birds in 1971-72. However, preliminary reanalysis of 1972 data gives estimates more similar to 1987. Potential problems with methodology

FORAGING BEHAVIOUR AND HABITAT USE BY AMERICAN WHITE PELICANS IN THE KLAMATH BASIN, CALIFORNIA. Leopoldo A. Moreno* and Daniel W. Anderson (Wildlife & Fisheries Biology Department, University of California, Davis, CA 95616).

American white pelicans (*Pelecannus erythrorhynchos*) often forage in groups, "herding" fish in shallow waters. In California, white pelicans usually forage in shallow lakes, coastal lagoons, agricultural ponds, and man-made recreational lakes. Water diversion for urban and agricultural consumption, exacerbated by five years of drought has affected both the quality and quality of their "natural" foraging areas. During the summers of 1990 and 1991 we studied the foraging behaviour and habitat use of white

pelicans in the Klamath Basin N.W. R. Two areas were included, Tulelake and Lower Klamath. Even though Tulelake is an agricultural lake, it supports larger numbers of pelican and other waterbirds than Lower Klamath, the latter being managed for waterfowl and kept in a "more natural" state. The patterns of habitat use and foraging behaviour, and the implications of agricultural runoff as the main source of foraging habitat are discussed.

NEST-SITE CHARACTERISTICS OF MARBLED MURRELETS IN THE PACIFIC NORTHWEST. S. Kim Nelson* (Oregon Cooperative Wildlife Research Unit, Oregon State University, Department of Wildlife, Nash 104, Corvallis, OR 97331) and Tom Hamer (Washington Department of Wildlife, 600 N. Capitol Way, Olympia, WA 98504).

Twelve Marbled Murrelet (*Brachyramphus marmoratus*) tree nests were found in Oregon's Coast Range, and Washington's Olympic Peninsula and North Cascades in 1990 and 1991. Nests were located through surveys at dawn, and searches for chicks and eggshells on the ground. All nests were situated in mature or old-growth forests in Douglas-fir, Sitka spruce and western hemlock trees >88 cm in diameter and >45 m in height. Strands ranged from open to closed canopy, and from 20 to >400 ha in size. Mean tree and site characteristics will be summarized and compared to other tree nests outside the Pacific Northwest. Only 45% of nests with known outcomes were successful; predation was the primary cause of failure.

PREDATION ON ISLAND-BREEDING SOOTY TERNS BY INTRODUCED CATS AND RATS: THE POSSIBILITY OF LOCAL EXTINCTION. M. Osorio*, R. Torres*, C. Matrorell, E. Reyes, M. Ocampo, A. Flores, A. Martinez, C. Lartique, E. Martinez. (Lab. Conducta Animal), Centro de Ecologia UNAM, AP 70 275, Fax 548 52 59, Mexico, DF).

We quantified predation on Sooty Terns by feral cats and rats on Isla Isabel, Nay., Mex. Presence - absence of eggs, chicks and parents were recorded for 95 nests (13% of the population). Cats and rats were systematically trapped and marked; cat pellets were collected and contents were macroscopically identified. We estimated >226 cats for the $2km^2$ island and < 100 rats. When terns were present, tern remains were found in 43% of cat pellets: when terns were absent, fish were eaten instead. Approximately 25% of tern reproductive adults were killed and eaten by cats, and 25% of all eggs disappeared. With this rate of predation, it is predicted that terns will be extinct on Isla Isabel in less than 15 years.

RESULTS OF THE NUNIVAK SEABIRD INVE TORY 1987-1990. Gene Peltola Jr.* (Selawik NWR, P Box 270, Kotzebue, AK 99752) and Brian McCaffe (Yukon Delta NWR, PO Box 346, Bethel, AK 99559).

During 1987-1990 we monitored population trends a productivity for Black-legged Kittiwakes and Comm Murres on 18 permanent study plots, on Nunivak Island, the eastern Bering Sea.. The kittiwake census means 1989 and 1990 were lower than 1988, while a comparis of plots common in both 1987-1988 revealed no signific differences. Kittiwake productivity varied greatly amo years. Seventy-nine percent of occupied nests observed 1987 were active (contained eggs and/or chicks), while onl 11% were active in 1989. Common Murre census means 1989 and 1990 were 15% higher than in 1988. A compar son of plots common in both 1987 and 1988 revealed a 21 decline in 1988. Murre productivity at our study site ha increased steadily from 1987 to 1990.

EVOLUTION AND DISTRIBUTION OF ALCIDS I BERINGIA. John F. Piatt (Alaska Fish and Wildlife Research Center, 1011 E. Tudor Road, Anchorage, Alask 99503) and Gus Van Vliet (Box 210442, Auke Bay, Alask 99821).

The earliest proto-alcid must have evolved in the food-poor, stable, subtropical oceanic environment of the Oligocen and Miocene (40-10 million years ago [mya]). Early radiation (7-12 mya) produced the oldest known alcid genera (e.g., [*Endomychura*], *Ptychoramphus*, *Brachyramphus*, and *Fratercula* [*Cerorhinca*]) and Recen species of these genera maintain southern affinities and dispersed foraging behaviors. Cooling of the northern oceans in the late Miocene (5-10 mya) set the stage for development in the Pliocene (2-5 mya) of food-rich, shelf and shelf-edge environments in Beringian seas. Associated with these dramatic changes was a rapid proliferation of new genera (e.g., *Mancalla*, *Cepphus*, *Alca*, *Alle*, *Uria*, *Fratercula*, and *Aethia*) and a preponderance of species that forage on aggregated prey. Pleistocene glaciations and the opening and closing of the Bering land bridge have had a profound influence on the Recent distribution and abundance of alcids in the Pacific and Atlantic Oceans and on exchange between these basins.

SEABIRD ASSOCIATIONS WITH MARINE TURTLES IN THE EASTERN PACIFIC. Robert L. Pitman (Southwest Fisheries Center, P. O. Box 271, La Jolla, CA 92038).

I analyzed seabird associations with marine turtles observed during 22 research vessel cruises in the eastern tropical Pacific (ETP) from 1976-1990. Of 3,032 individual turtles sighted, 176 (5.8%) were accompanied by a total of 412

rds of 13 species, with three species of boobies accounting r 63% of the associated birds. The mean number of birds r associated turtle was 2.3 (S.D. = 9.63; range 1-125); ngle birds occurred with 82% of the associated turtles. abirds utilized turtles the same way they use other float- g objects on the ocean. i.e. as roosting platforms and to ed on fish that aggregate below them. The only species of a turtle that birds associated with was the olive ridley epidochelys olivacea), which was by far the most abun- nt turtle of the five species observed. Although several illion olive ridleys have been harvested in the ETP over e past several decades, it is still an abundant species and ntinues to represent a small but contributing factor in the rvivorship of ETP seabirds, especially boobies.

ISTRIBUTION AND FORAGING ECOLOGY OF ARKINSON'S PETREL IN THE EASTERN PA-IFIC. Robert L. Pitman and Lisa T. Ballance* (Southwest isheries Science Center, PO Box 271, La Jolla, CA 92038). e studied the distribution and foraging ecology of arkinson's Petrel (*Procellaria parkinsoni*) in the eastern acific during 1976-90. Parkinson's Petrels regularly asso- iated with dolphins: of the 618 petrels we observed, 469 76%) were associated with a total of 10 species of dolphins, n 55 occasions, with 1 to 300 petrels present. They ccurred mainly with two rare dolphin species: melon- eaded whale (*Peponocephala electra*) and false killer hale (*Pseudorca crassidens*). We suggested that arkinson's Petrel is adapted to feed as a diving scavenger mong large, slow-swimming dolphins, and is ill-equipped o take live prey being flushed by fast-moving tunas and ther dolphin species that many of the other seabirds asso- iated with. Parkinson's Petrel relies more on diurnal eeding than was previously thought, which is at least in part ttributable to the fact that it appears to be more dependent n marine mammals for foraging than has been suggested or any other species of seabird studied to date.

RELIMINARY COASTAL SURVEYS OF ARBLED MURRELETS IN SOUTHEST ALASKA. C. John Ralph, Sherri Miller (U. S. Forest Service, Red- ood Sciences Laboratory, Arcata, CA) and Chris Iverson U. S. Forest Service, Petersburg, AK).

he need for more precise population estimates of Marbled Murrelet populations in the Pacific Northwest prompted a ooperative pilot project during summer 1991. Investiga- rs from various national forests, the National Park Ser- ice, and the Fish and Wildlife Service conducted boat urveys along several coastal sections to assay the feasibil- ty of estimating the total population of the region in a omprehensive survey beginning in 1992. Surveys were onducted parallel and at right angles to the coast to deter- ine the typical distribtion of murrelets. Results indicated hat distribution appears patchy and, where present, birds are more highly concentrated than in the southern part of their range, especially at the mouths of inlets and fjords.

FACTORS INFLUENCING EVALUATION OF OCCUPANCY OF FOREST STANDS BY MARBLED MURRELETS. C. John Ralph, Brian O'Donnell, and Sherri Miller (U. S. Forest Service, Redwood Sciences Laboratory, Humboldt State University, Arcata, CA 95521).

Several variables are important in determining if a stand is occupied by murrelets resulting in observing behavior indicative of breeding. The implications of a false negative or a false positive are profound for the species and for the timber industry. These variables influence the number of surveys conducted at a given station, surveys in a stand, and years a stand needs to be surveyed. Among the important variables we examine are: the average detection distance for visual and auditory detections; the effect of weather on detections; the effects of stand density (and station placement) on the number of occupied behaviors observed; and the efficiency of varying lengths of surveys during a given morning. We also examine the interactions of the probability of detecting no birds in an occupied stand at varyng mean numbers of detections, number of survey mornings, and frequencies of occupied behaviors.

BOOBIES AND BOMBS, BRIDGES AND CORMORANTS. Mark J. Rauzon, (Marine Endeavors, Box 4423, Berkeley, CA 94704)

Populations of red-footed boobies and double-crested cormorants are increasing in number and nesting on man-made structures.. As these expanding populations of Pelacaniformes saturate natural nesting colonies, they move into conflict with human land use. Two examples are presented. Cormorants populations in the San Francisco Bay have doubled in recent years and have affected operations on the bay bridges where they nest. Red-footed boobies have increased in the Main Hawaiian Island and expanded their colony on the artillery range of the Kaneohe Marine Corps Station. Traffic and fires, respectively present unique mortality factors as well as management opportunities of these pelecaniformes colonies.

MOULT OF THE HUMBOLDT PENGUIN *Spheniscus humboldti* J.C. Riveros-Salcedo* and L. Paz-Soldan (APECO, Parque Jose de Acosta 187. Lima 17. Peru).

Humboldt Penguins living in the southern coast of Peru moult at the beginning of the year before the nesting season. Moult lasts from sixteen to twenty-three days. Most of the adult birds (93%) moult during January and middle February. Juveniles do not have a restricted moult season. During the moult birds spent the day ashore resting in the beaches and caves near the shoreline. A few birds go into the sea for

bathing and preening to avoid tick infestation. After the mould penguins spent three to five weeks at sea feeding and recovering weight for the incoming breeding season. Weight increases from 4.56 kg. to 5.94 kg. on the average, but some birds can weight 6.6 kg. just before moulting. After the moult, birds net weight loss can be 1.5 59 2.2 kg. Males being larger than females have a lower weight loss.

THE EFFECT OF PREY TYPE AND DENSITY ON FEEDING EFFICIENCY OF PHALAROPES; LESSONS FROM MONO LAKE. Margaret A. Rubega (Dept. of Ecology and Evolutionary Biology, University of California, Irvine CA 92717.

The idea that prey density affects feeding behavior in birds underlies many approaches in ecology. Yet, to date, there are few direct measures of the effect of changes in prey density or composition on measures of feeding performance in birds. I experimentally measured the effect of prey density and prey type on the feeding efficiency of Rednecked phalaropes (*Phalaropus lobatus*) in the laboratory and in the field at Mono Lake, CA. Feeding efficiency varies in a complex manner with sex of the bird, prey type and density. Furthermore, both lab and field observations demonstrate that phalaropes at Mono Lake, despite high efficiencies on brine shrimp at high densities, are depending on less efficiently handled brine fly larvae at low densities. These results have implications for the future of Mono Lake, and for expectations of the behavior of avian planktivores at sea.

AT SEA COUNT OF MARBLED MURRELETS IN SOUTHEAST ALASKA. Fred A Sharpe* Dale Anderson, +Garve Hoffler, Cynthia G. D'Vincent, and Russel M. Nilson (Intersea Research PO Box 1106 Carmel Valley CA 93924) +(Admirality Tours 9040 Glacier Highway Juneau AK 99801)

Surface counts of Marbled murrelets (*Brachyramphus marmoratus*) were made during 20 days at sea in July of 1991. A total of 27,611 birds were counted. Murrelet distribution was found to be extremely patchy, with approximately 90% of the birds occurring in aggregations larger then 250 birds. These aggregations often occurred in predictable locations, and were generally situated in near shore environments within 1.5 km of land. These aggregations were localized in areas possessing distinct bathymetric features such as islets, sills, reef, fjords, bay mouths, kelp beds, and other areas characterized by abrupt changes in depth. The core concentration of birds often centered over the shallower portions of these submarine features in water ranging from 890 to 10 fathoms. Murrelet aggregations appeared to be associated with concentrations of bait fishes. Evidence for this comes from 1) observations of actively diving murrelets, 2) observations of other species of foraging marine birds, 3) hydroacoustic detections of school bait fishes, and 4) hydroacoustic detections of large, solit targets in the water column indicative of salmonids a attracted to bait fish.

VOCALIZATIONS OF THE MARBLED MURRELE AT INLAND SITES. Steven W. Singer* (Santa Cruz C Museum of Natural History, 1305 East Cliff Drive, Sa Cruz, CA 95062), S. Kim Nelson (Oregon Cooperat Wildlife Research Unit, Oregon State University, Dept Wildlife, Nash 104, Corvallis, OR 97331) and Brian O'Donnell (U.S. D.A. forest Service, Redwood Scienc Laboratory, 1700 Bayview Dr., Arcata, CA 95521).

Preliminary results of an on-going study of murrelet voc izations at Big Basin Redwoods State Park, CA, Redwo National Park, CA and Valley of the Giants, OR, will b presented. Dawn vocalizations were tape-recorded throug out the breeding season and analyzed on a Kay 55 Sonagraph. Sonagrams of four calls identified thus far w be presented - the primary call, the alternate call, the whist call, and the soft que call. Other existing call types will b delineated in the completed study, which will also produc an audio cassette training tape with examples of all calls Assistance in call analysis was provided by dr. Pepper Tra of the California Academy of Sciences.

FLEDGING OF A MARBLED MURRELET FROM A REDWOOD TREE NEST. Steven W. Singer (Santa Cru City Museum of Natural History, 1305 E Cliff Drive, San Cruz, CA 95062), David L. Suddjian* (Habitat Restoration Group, 6001 Butler Lane #1, Scotts Valley, CA 95066) Stephanie A. Singer (218 Nevada St., Santa Cruz, CA 95060) and Rod Norden (PO Box 9593, San Jose, CA 95156).

California's fourth Marbled Murrelet nest and the first ev found in a Coast Redwood (Sequoia sempervirens) wa discovered 5 May 1991 at Big Basin Redwoods State Park Santa Cruz County. The nest tree was 79 m high with a dbh of 5.3 m. The nest was on a 61 cm diameter moss-free branch, 41 m above the ground. The nest was found at or about the time of egg-laying and monitored until the chick fledged, 22 minutes after sunset on 3 July. Events at the time of fledging were observed first hand and will be presented along with details of the nest site.

BREEDING SITE FIDELITY IN MAGELLANIC PENGUINS. David Stokes* (Dept of Zoology, NJ-15, University of Washington, Seattle, WA 98195).

Magellanic penguins bred in colonies that have a diversity of habitats and nest types. These penguins are very site faithful between breeding seasons at all spatial levels colony, area within colony, and nest site. However, the

e fidelity is not complete. The likelihood of a penguin lecting a new nest may be influenced by several factors, luding nest quality, previous breeding success, and site elity of the mate. Some nest changes are forced, either by cupation of the nest by other penguins, or by loss of nest a due to natural or human-caused alteration of habitat. I mine the effects of dislocation and the factors that fluence the subsequent nest choice of penguins that have t their previous nest. Understanding site fidelity and bitat choice may be of help in conservation of this and milar species as natural habitats are increasingly modified y humans.

EASONAL AND YEARLY VARIABILITY IN FOOD ELIVERED TO COMMON MURRE CHICKS ON E. FARALLON ISLAND. Craig S. Strong*, David G. inley, Robert J. Boekelheide, Stephen H. Morrell, and arriet R. Huber (Point Reyes Bird Observatory, 4990 oreline Hwy. Stinson Beach, CA 94970).

rom 1974 to 1977 about 105 Common Murre (*Uria aalge*) est sites were observed each year during the nestling period n S.E. Farallon Is. NWR. Prey size and delivery time to hicks at numbered sites where recorded throughout day-ight hours on selected days. Here, these data are analyzed ith regard to two questions: 1) How does provisioning hange with chick age, and 2) How much food is required o bring chicks to fledging age? For ll years, provisioning rate increased with increasing chick ge when measured as food mass per day delivered to hicks. The correlation of number of prey delivered per day ith chick age was not significant in most cases, due to ewer but larger fish being delivered to older chicks. Mass f food delivered to chicks, averaged by year, ranged from 5.1 gm/day in 1976 to 51.7 gm/day in 1977. Sources of ariability in amount delivered and their relation to fledging ge are discussed.

AGONISTIC BEHAVIOR OF BLACK GUILLEMOTS ON COOPER ISLAND, ALASKA: PRELIMINARY RESULTS. Robert Suydam* (North Slope Borough-Wildlife Management, Box 69, Barrow, AK 99723) and George Divoky (Institute of Arctic Biology, Univ. of Alaska, Fairbanks, AK 99775)

The breeding behavior of Black Guillemots was examined on Cooper Island, Alaska during 1988 and 1989. Focal animals were marked and of known breeding history. We present preliminary results of the pattern of agonistic behaviors during the prelaying and incubation stages of nesting for 1989. Prelaying males have a greater rate of agonistic behaviors than do females regardless of experience. During incubation lst-time breeding males have a greater rate than do lst-time breeding females and experiences males. Gonadal development may explain this later peak in agonistic behaviors of lst-time breeding males.

INTERANNUAL SURVIVAL OF COMMON MURRES ON SOUTHEAST FARALLON ISLAND, CALIFORNIA. William J. Sydeman (Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, CA 94970).

The survival of color-banded Common Murres breeding in two colonies on Southeast Farallon Island, California was studies from 1985 - 1991. Colony I is large (~ 1500 pairs) and stable, having grown extensively during the 1970s. Colony II is small (~ 50 pairs) and growing, having been established in 1985. Survival of adult breeding birds averaged 93.6% in Colony I (n=327) and 83.0% in Colony II (n=110). In Colony I survival was lowest between 1986-87 (88%) and between 1990-91 (89%). In Colony II survival was lowest in 1989-90 (65%); this dramatic mortality was due to Peregrine Falcon predation during winter. At Colony I, male survival for the period was 100% (n=76), and female survival averaged 94.6% (n=157). At Colony II, male survival averaged 76.9% (n=52) and females averaged 82.8% (n-58). Sex differences were significantly different at Colony I (P=0.04), but not at Colony II (P=0.44). Differences between sites may be due to density, habitat, or age-structure.

THE CONSERVATION OF SEABIRDS IN ALASKA AND SOVIET FAR EAST. Kenton D. Wohl* (U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503) and Alexander Ya. Kondratyev (Institute of Biological Problems of the North, K. Marx Street 24, Magadan 685010 USSR)

About 50 million breeding seabirds occur in Alaska at about 1,360 colonies. Alaska's breeding seabirds represent about 96% of the breeding seabirds in the continental U.S. The population of breeding seabirds on the Soviet side of Beringia has been estimated to be between 25 and 30 million birds at about 1,000 colonies. Many species likely forage and winter in the same areas in the North Pacific and Beringia and are subject to similar human threats. To effectively manage seabird populations that cross international boundaries requires coordination and cooperation in research, conservation, and management activities. This paper describes existing laws and institutional structures in the United States and Soviet Union for protecting and managing the vast seabird resources in Beringia. Joint U.S.-U.S.S.R. proposals to create in Beringian Seabird Working Group, Beringian International Seabird refuge, Beringian Seabird Databases, and Beringian Seabird Monitoring Program as means to promote and facilitate cooperative and coordinated research, management, and conservation program for seabirds of Beringia are described.

Abstracts. . .

ACOUSTIC METHODS FOR VISUALIZATION OF SEABIRD PREY DISTRIBUTIONS: NEW APPLICATIONS IN SEABIRD FORAGING ECOLOGY. Jeannette E. Zamon* and Charles H. Greene (Section of Ecology and Systematics, Corson Hall, Cornell University, Ithaca, NY 14853-2701).

Acoustic techniques for remote sensing of zooplankton and nekton are capable of measuring in situ abundance and distribution of seabird prey. These non-invasive methods provide powerful tools for assessing prey patchiness, density, and size distributions. Acoustic data can be collec over many spatial and temporal scales; furthermore, th can provide information on prey distributions in rea near-real time. These types of data — which have be unavailable to seabird ecologists in the past — are essen for developing and testing realistic models of seabird for ing behavior. Such models are critical to successful ma agement and conservation efforts. A new survey meth tested in the Southern Ocean and off the coast of Califor has proven particularly well-suited for visualizing the pr field of diving seabirds such as penguins and alcids.

Other Seabird News

1992 CWBS Annual Meeting and Special Symposium

The Colonial Waterbird Society (CWBS) is pleased to announce that their 1992 Annual Meeting will be held in Oxford, Mississippi, USA, 14-18 October 1992. The central theme of the scientific program is to be population biology of colonially-breeding waterbirds. As part of this aim, there will be a one-day symposium entitled "The Double-crested Cormorant: Biology, Conservation & Management." The format for the symposium will include both invited and contributed papers in six subject areas: population history, population dynamics, feeding ecology, fisheries and aquaculture, cormorant and human interactions, and policy, mangagement, and future research. The number of oral contributed papers will be limited, but there will be extensive opportunities for contributed poster presentations. The proceedings of the symposium are to be considered for publication as a supplemental issue of *Colonial Waterbirds*. Researchers and managers with extensive data in any of the above subject areas are urged to contact both Dr. D. V. Weseloh, CWS, Canada Centre for Inland Waters, Box 5050, Burlington, Ontarior, Canada L7R 4A6 (phone: 416-336-4968; fax: 416-336-6434) and Dr. D. N. Nettleship, CWS, Bedford Institute of Oceanography, Box 1006, Dartmouth, Nova Scotia, Canada B2Y 4A2 (phone: 902-426-3274; fax: 902-426-7827) concerning additional details and a position on the program. Other suggestions for mini-symposia or special topics related to population biology of colonial birds are also welcome and should be communicated to Dr. D. N. Nettleship, Chairman, 1992 CWBS Scientific Program as soon as possible.

SEABIRD SPECIALIST GROUP NEEDS YOUR HELP

The ICBP/IUCN Seabird Specialist Group has now produced two ICBP technical volumes on the status and conservation of the world's seabirds, and another volume on the management of seabird islands is almost ready to go to press. Essentially we now have the data to produce an action plan for the seabirds of the world. This plan would specify which species, colonies, islands, or marine areas most need international conservation assistance, what sorts of data should be collected to monitor future porblems, and what international programs, treaties, or laws are needed to protect seabirds. The plan would also be used by ICBP to raise the necessary funds for seabird conservation programs and to encourage decision-makers to include seabirds in their considerations.

Seabirds occupy a waide range of latitudes and marine environments that differ greatly in their local conservation problems, so writing a plan will require contributions from scientists and conservationists of many nations. This is an invitation to participate in this process.

You can help in several ways: first would be to answer the questions listed below; second would be to volunteer to serve on committees that would write or review drafts of different chapters; and third would be to make the investment of time, energy, or resources to help implement the plan.

These are the questions we need help with.

—What areas of seabird conservation should an inter national action plan address?

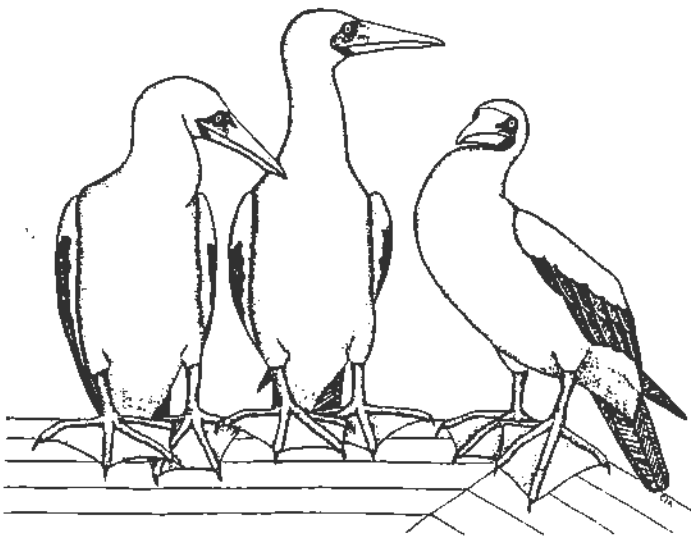
—Should we attempt a species approach, or a site approach, or a theme approach (egging, seabird/fisheries conflicts, oil, etc.)?

—What sorts of information do we need to collect to assess or monitor threats? How should this information be stored and made available?

—How can we ensure that the action plan is carried out?

—How do we assess the plan's effectiveness and how do we update it?

—How much of this should or could be done by an international specialist group and how much by local or regional seabird groups?



THE SEABIRD GROUP CONFERENCE
March 27-29, 1992, Glasgow, Scotland

Vivian Mendenhall

The Seabird Group is the British equivalent of PSG. This year the group held its first conference in four years, and I attended while on vacation in Britain. The dominant theme of the conference was the recent breeding failure of several seabird species in the northern British Isles, in association with severe declines in their principal prey, sandeels (*Ammodytes marinus*). The British have not yet figured out the causes or long-term trends in their seabird-fish systen (as I had hoped). However, their work already suggests some new ways of looking at our changing North Pacific seabird populations.

Several studies were initiated in Scotland in 1990 to investigate the relationship between populations of fish and seabirds. The research benefitted from the lucky circumstance that 1990 was a bad year for the birds but 1991 was excellent.

Pat Monaghan reported on foraging ranges, time budgets, and components of productivity of **Black-legged Kittiwakes** and **Common Murres** in Shetland (the full study also includes **Arctic Terns** and **Shags** *Phalacrocorax aristotelis*). **Common Murre** productivity was good in 1990 but was better in 1991 due to improved fledging success. Murres fed their chicks largely on sandeels in both years; however, radio-tagged birds made longer foraging trips and spent more tiine diving for prey in 1990 than in 1991. Kittiwake breeding failed completely in 1990 but was good in 1991; the principal difference between years was in fledging success. Many nestlings were left unattended before one week of age in 1990, and were killed by predators or neighboring kitti wakes or died on the nest. Radio-tagged kittiwakes often flew beyond the range of the receiver (beyond 40 km) in 1990, whereas in 1991 foraging trips were short, most staying within the local bay.

Keith Hamer and **Robert Furness** compared breeding success and demography of **Skuas** (*Catharacta skua*) on Shetland in years of good and poor food availability (the 1970s and 1987-1989). Skuas mostly eat 1-year-old sandeels, and breeding success varied with recruitment of 0-class sandeels in the previous year. In poor years, chicks that were not attended by parents suffered high mortality from neighboring skuas, which was the major cause of breeding failure. However, no reduction in growth of chicks could be detected in poor years. The most surprising finding was that adult mortality was higher in years of poor food supply on Shetland, in comparison both with good years at that colony and with another colony where foraging had been co[n]tently good.

Mike Harris is analyzing the relationship bet[w]een the chronology of breeding in the Shag (*Phalacro[co]rax aristotelis*) and the abundance of forage fish on the east co[a]st of Scotland. Sandeels are the principal fish in diets bo[th] adult shags in summer (based on pellets), and of ch[icks] (based on gastric lavage of adults by Sarah Wan[less]. Britons don't shoot birds for diet analysis). Data on san[d] abundance in the North Sea are not precise enough to al[low] analysis of their relationship with **Shag** breeding chro[n]ology. However, early emergence of sandeels from the s[u]strate, which is favored by warm clear water, and e[arly] breeding of Shags are both associated with frequent west[erly] winds in spring. A tantalizing correlation was found b[e]tween initiation of nesting and abundance of 15-cm herri[ng], but it is not clear what this means, since herring are virtu[ally] absent from diets of the Shags.

Fish biologist **Peter Wright** is investigating fac[tors] that influence the availability of fish to surface-feed[ing] seabirds in Shetland. A crucial question is whether p[oor] breeding success of surface-feeding birds was associ[ated] with low fish abundance or just with changes in availabi[lity] of fish to the birds. Young-of-the-year sandeels on wh[ich] kittiwakes depend may arrive in northern Scotland each y[ear] from the southwest, a movement that probably depends [on] currents. Bioacoustic surveys showed lower densities [of] sandeels in 1990 in all levels of the water column than [in] 1991. Only a small fraction of the sandeel population w[as] available to surface-feeding birds in either year; shoals [of] fish at the surface were smaller than those below the surfac[e] and generally formed only in early morning. Wright is al[so] studying how yearly availability of fish to birds varies wi[th] their burrowing behavior, and how nutritional value of th[e] fish to birds may vary with the fishes' growth rates.

Mark Avery of the Royal Society for the Protecti[on] of Birds reported on trends in the commercial fishery fo[r] sandeels. The Shetland fishery began in 1974; catche[s] peaked in 1982, but they had declined 90% by 1989. Man[a]agement data for this fishery have been derived from virtu[al] population analysis, which (I think) uses yearly fishin[g] effort and the numbers and age structure of catch to estima[te] the size and age structure of the fish population. Aver[y] argued that virtual population estimates are poor for a short-lived fish such as the sandeel, for which the unknown non-fishing component of mortality (such as predation) is rela[-]tively high. Managers were therefore unable to predict the severe decline in sandeel stocks until commercial catches had fallen to very low levels. The fishery was closed aft[er] 1989, however.

Speakers at the Glasgow conference agreed that the ent seabird breeding failures in northern Britain have en caused by a crash in sandeel stocks. No one has been e to conclude whether fish declines have been due to anographic conditions or fishing pressure. However, current British work has already contributed major ghts to the analysis of seabird breeding failures. For ance, when surface-feeding seabirds in Shetland were able to obtain forage fish, this reflected low fish popula- ns within the foraging range of the birds, not just lack of ilability because fish stayed below the surface. On the er hand, diving seabirds were able to obtain normal portions of forage fish in the diet, even at relatively low densities, by an increase in foraging effort. Diving birds ve been observed to obtain fish while they are unavailable surface-feeding birds in several previous cases (e.g. lopolskii 1961, Ecology of Sea Colony Birds of the rents Sea, Jerusalem, Israel Progr. Sci. Transl.; Piatt et al. 91, Can. Wildl. Serv. Occ. Pap. 68:21). The British work now elucidating behavioral mechanisms by which diving rds can compensate for low prey densities. We may even able eventually to predict prey densities at which diving rds also would fail.

There are many parallels between current concerns r seabirds in Britain and in Alaska, including our lack of formation on the relative roles of climate and fisheries in anging food availability to seabirds. Fishing pressure has nteracted with oceanographic changes (among other fac- rs) to depress Peruvian seabird populations in the 1960s Schaefer 1970, Trans. Amer. Fish. Soc. 99:461) and Nor- egian **Common Murre** populations in the 1980s (Vader al. 1990, Stud. Avian Biol. 14: 175; Vader, pers. comm.). Although the factors and interactions affecting each system re unique, it would seem that climate and fishery pressure should both be considered when studying any major decline in a seabird population.

Some topics of other papers at the conference were seabird life history traits (R. Ricklefs), seabird population regula- tion (J. Coulson; he suggested that colony size is regulated, rather than population size per se), energetic investment by breeding seabirds (G. Gabrielson, also M. Asheim and R. Barratt), recruitment and philopatry of murres (D. Halley; recruitment of yearly cohorts was proportional to good weather during the chick-rearing of each at sea), sperm competition in auks (J. Briskie, S. Sealy, and J. Piatt), and breeding strategy of albatrosses (J. Croxall). I also attended a meeting of the international coordination group for the Seabirds at Sea Database. The group is compiling data from aerial and ship-based transects collected by 8 nations, and they are working on an atlas of oil vulnerability for all North Sea seabirds.

A footnote: the Nature Conservancy Council (the Scottish equivalent of the Fish and Wildlife Service) was renamed Scottish Natural Heritage in April 1992.

Scientific Names are for the Birds

Jobling, J. A. *A Dictionary of Scientific Bird Names*. New York: Oxford University Press, 1991. 272 pp. $29.95 (cloth).

How many times have we wondered what scientific names refer to? Traditionally, all biologists understood the significance of scientific names; however, few field ecologists today are familiar with taxonomic literature. Did you know that *Sterna* is Old English for tern, or that *Phalacrocorax* is from the Greek: *Phalakros* = bald and *korax* = raven? How many bird biologists know that Sula nebouxii comes from Sula, the Scandinavian name for the Northern Gannet and nebouxii, which refers to Adolpe Simon Neboux, a French surgeon, naturalist, and explorer in the 1800s? In examining J. A. Jobling's *Dictionary of Scientific Bird Names*, I have encountered every name I have looked for. The book is complete and for many of us will be a useful addition to our reference libraries when we wish to know the origins of the scientific names of the birds we deal with.

Jobling's *Dictionary* is short and concise. Definitions of names borrowed from other languages are adequate. References to birds named for early biologists are brief and to the point. For instance, the citation for *nebouxii* simply says, "After Adolphe Simon Neboux (fl. 1840) French surgeon, naturalist, and explorer." For those who want more detailed information, the entries may be too brief; however, they do provide a starting point for further investigation. For those who simply want basic definitions, this will be a nice reference book.

Malcolm Coulter

Department of the Interior News Release. . .

A bird once so imperiled by DDT it was almost listed as endangered, but now so abundant it's become a nuisance to many fish farmers and recreational anglers nationwide, is the focus of a three-part, multi-year research and management effort by the Interior Department's Fish and Wildlife Service, agency Director John Turner announced.

"The double-crested cormorant represents one of the most ironic wildlife success stories in the past quarter century," Turner said. "In the late 1960s, many wildlife scientists thought the bird would be one of the first additions to the U. S. endangered species list." But since the early 1980s—more than decade after DDT was banned and its effects in the environment began to fade—this species has been increasing its population by nearly 7 percent each year. "Unfortunately," Turner adds, "this phenomenal recovery appears to be fed, literally, by a commercial fish farming industry that also has experienced a rapid growth throughout the past decade. In some locations, cormorants have benefitted from the artificial stocking of fish for recreational purposes. In one case documented in Utah, the cormorants' take of stocked trout far exceeded the catch by anglers."

The cormorant is a migratory water bird that feeds almost exclusively on fish. It nests in northern states and Canada and winters throughout the South and into the Caribbean. Its migration route down the Mississippi Valley takes it through the very heart of the burgeoning new fish farming, or aquaculture, region of the United States. In Mississippi, Arkansas, and Louisiana, there are several hundred commercial catfish farms; while from Arkansas northward to Minnesota, commercial production of bait minnows and rainbow trout have become strong growth industries in recent years. Concerns in the Northeast and Northwest focus on the potential impact of cormorant predation on out-migrating juvenile salmon.

"The cormorant situation presents some very significant challenges," according to John Nickum, the Service's national aquaculture coordinator. "It's fully protected under the Migratory Bird Treaty Act, so commercial producers and anglers simply cannot take bird control measures into their own hands. If fish producers can demonstrate predation problems, our Law Enforcement branch can issue permits to kill preying birds. But our hope is that these new studies and field applications will provide an information base from which management plans can be developed. The plans can show the was to effective, low-cost, non-lethal ways to keep the cormorants away from the aquaculture cash crop."

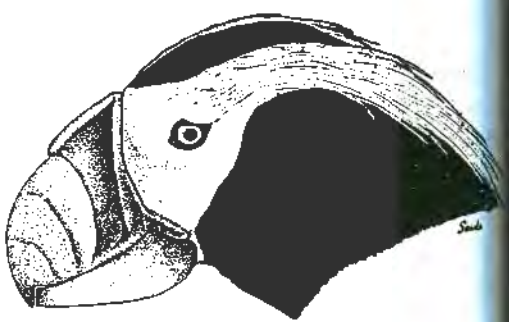
The first of the three efforts will provide $200,0 for the Service's Northern Prairie Research Center Jamestown, North Dakota (Rt. 1, Box 960 58401), to lo at the population dynamics and basic biology of the com rants in the Central Flyway. The second study will conducted by the Mississippi Cooperative Fish and Wildl Unit, Mississippi State University, and will explore t effects of various control strategies. Lastly, the Ma Cooperative Fish and Wildlife Unit, University of Maine Orono, will look at the effects of cormorant predation Atlantic salmon, a species several New England states a the Service have been trying to restore as a recreation species since the 1970s.

"Fish farmers we have worked with understan how complex this situation is and have shown great patienc and support while we were designing these studies," Nickum said. "What we're hoping for is a 'win/win' solution b which a migratory bird is accorded protection, while a new industry is given the opportunity to develop and grow, an certain recreational fisheries can be effectively restored."

Fish farming in the United States—especially fo trout and catfish—has experienced rapid expansion sinc the 1970s. In 1990, the Service issued a revised an expanded National Aquaculture Policy outlining and em phasizing the agency's commitment to work with the indus try to share fish culture technologies, including nutritiona and disease control information.

"Good aquacultural practices can actually benefi conservation of some wild fish by alleviating harvest pres sures on certain diminishing wild stocks," Nickum said. He added that the Service over the past century has helpe provide a foundation for the inland freshwater fish farming industry through its fisheries research and hatchery devel opment.

(Submitted by James Lovvorn



Blood Samples Wanted

Richard Bradbury of Oxford University (Department of Zoology, Edward Grey Institute of Field Ornithology, South Parks Road, Oxford OX1 3PS) is collecting blood samples from gulls as part of his PhD work. Bradbury and Dr. Richard Griffiths would like to sample as many taxa as possible for mitochondrial DNA analysis. They are looking for people who might be able to donate samples. If you would like to help, let them know which species you have or are likely to acquire so that they can supply you with a preservative buffer and sample tubes for the collection of blood. Bradbury and Griffiths would be very grateful for any donations and will acknowledge contributions in any publications resulting from their work. They are particularly interested in the following species:

(American) Herring Gull - *Larus (argentatus) smithsonianus*
Great Black-back Gull - *L. marinus*
Glaucous-winged Gull - *L. glaucescens*
Iceland Gull - *L. glaucoides*
Kumlien's Gull - *L. (glaucoides) kumlieni*
Glaucous Gull - *L. hyperboreus*
Western Gull - *L. occidentalis*
Yellow-footed Gull - *L. livens*
Dominican Gull - *L. dominicanus*
Slaty-backed Gull - *L. schistisagus*
Thayers Gull - *L. thayeri*
Ring-billed Gull - *L. delawarensis*
Mew Gull - *L. canus*
California Gull - *L. californicus*
Laughing Gull - *L. atricilla*
Franklin's Gull - *L. pipixcan*
Bonaparte's Gull - *L. philadelphia*
Little Gull - *L. minutus*
Ross' Gull - *Xena rosea*
Ivory Gull - *Pagphila eburnea*
Black-legged Kittiwake - *Rissa tridactyla*
Red-legged Kittiwake - *R.brevirostris*

Seabird Group Offices Destroyed by Firebombing

The animal ecology research world has been shocked in Scotland by the recent firebombing of the Instiute of Terrestrial Ecology's research station at Banchory. The ensuing fire destroyed much of the offfices of Mike Harris and Sarah Wanless, both Seabird Group Executive Committee members. The station's fine library was also lost. The bombing was carried out by terrorists following the policies of the Animal Liberation Front. These policies seem particualry stupid in this instance as the work of this research station was targeted towards the conservation of animals in the wild and the damage done will slow down these conservation efforts. Mike and Sarah have begun the painful task of limiting the damage to their work and rebuilding their reprint collections. Anyone who wishes to help might consider sending reprints.

Mark Tasker

1993 Annual Meeting

The 1993 Annual Meeting will be held in Seattle from 9-13 February and will celebrate PSG's twentieth anniversary. Lora Leschner is chair of the local committee. PSG members who live in the Pacific Northwest and would like to help with meeting arrangements and other activities should write or call Lora.

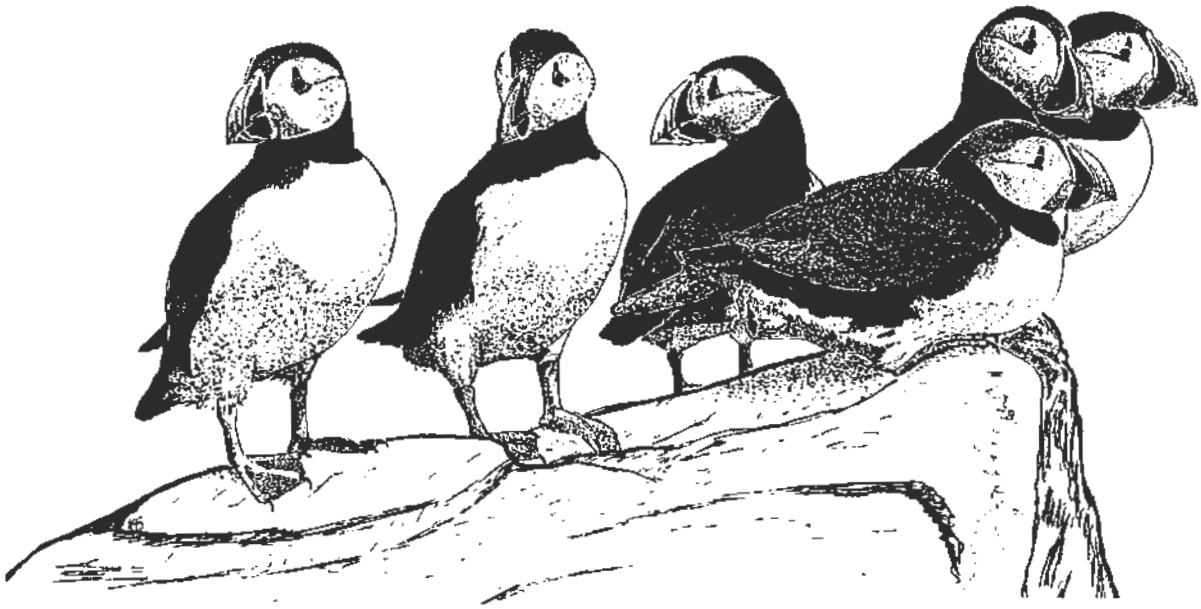
Lora Leschner
Washington Dept. of Fish and Game
16018 Mill Creed Blvd.
Mill Creek, WA 98102
Phone: 206-774-8812

Two meetings will be held the day before the annual meeting begins—PSG's Marbled Murrelet Technical Committee Meeting and a meeting on Seabird Data Bases, jointly sponsored by Minerals Management Service and the U. S. Fish and Wildlife Service. Kim Nelson is in charge of the Marbled Murrelet Technical Committte Meeting and Palmer Sekora is in charge of the Seabird Data Base Meeting. Both meetings will be held at the Westin Hotel in downtown Seattle.

SALARIES OF NATURAL RESOURCE PROFESSIONALS

Organization	Who's in Charge	Salary
National Wildlife Federation	Jay Hair	$220,000
World Wildlife Fund	Kathryn Fuller	$188,880
The Nature Conservancy	John Sawhill	$185,000
U. S. Department of the Interior	Manual Lujan	$143,000
National Audubon Society	Peter A. A. Berle	$140,000
Environmental Defense Fund	Frederic Krupp	$125,000
The Wilderness Society	George Frampton	$120,000
Natural Resources Defense Council	John Adams	$120,000
U. S. National Park Service	James M. Ridenour	$104,800
U. S. Fish and Wildlife Service	John F. Turner	$104,800
U. S. FWS, Region 1	Marvin L. Plenert	$ 90-112,100
U. S. FWS, Region 7	Walter Stieglitz	$ 90-112,100
California Department of Fish and Game	Boyd Gibbons	$ 95,052
Washington Wildlife Department	Curt Smitch	$ 87,434
Sierra Club	Michael Fisher	$ 86,000
Conservation International	Russell Mittermeir	$ 85,000
Alaska Department of Fish and Game	Carl Rosier	$ 83,844
Oregon Department of Fish and Game	Randy Fisher	$ 74,112
Greenpeace USA	Peter Bahouth	$ 33,719
Earth Island Institute	Dave Phillips	$ 17,227
Pacific Seabird Group	Palmer Sekora	$ 0

Source: Information concerning private organizations is from *Outside Magazine*, September 1990. Information concerning public agencies is from the agency.



PACIFIC SEABIRD GROUP EXECUTIVE COUNCIL 1992

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