FORUM ON MANAGING WILDLIFE, FISH, AND RECREATION INTERACTIONS ON ALASKA'S NATIONAL FORESTS
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ABSTRACTS

WATCHABLE FISH: USING UNDERWATER VIDEO TO ENHANCE EDUCATION APPLICATIONS AND IMPROVE RECREATION OPPORTUNITIES

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We will present an overview of the emerging use of underwater video in the fisheries profession and provide examples of how underwater video is being used to capture footage to be used in a variety of educational applications. We will also highlight a very successful "Watchable Fish" program at the Mendenhall Glacier Visitor Center and discuss an ongoing project to produce an educational video on juvenile salmonids in Southeast Alaska. Our presentation will provide an overview of the equipment necessary to collect, display, and edit underwater video and will include representative clips of juvenile salmonids created using video editing software.

EVALUATING MOUNTAIN GOAT RESPONSE TO HELICOPTER OVERFLIGHTS ON FOREST SERVICE LAND IN ALASKA

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The number of proposed helicopter flights used for sightseeing and to gain access to the backcountry has increased in recent years on the Chugach and Tongass National Forests. Proposed activities associated with helicopter flights include sightseeing, wildlife viewing, heli-skiing, heli-hiking, dogsled mushing, icefield landing tours, mechanized snow vehicle expeditions, and Army National Guard training. Both Forests currently require helicopters supporting these activities to maintain a 500 m vertical distance from observed mountain goats (*Oreamnos americanus*). Experts disagree as to the appropriateness of this restriction; different land and wildlife management agencies maintain inconsistent distance restrictions. Greater distances have been recommended by

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disturbance studies conducted in Canada. We collected behavioral response data from 131 groups of goats during 357 helicopter overflights conducted during winter, spring, and summer at four locations on the Chugach and Tongass National Forests. We found helicopter approach distance had the greatest effect on disturbance probability, with 45% of flights under 500 m, 34% of flights 500-1000 m and 12% of flights 1000-1500 m causing some form of disturbance behavior. The types and magnitude of response observed were different than reported in other studies. The majority of disturbance events elicited alert reactions of short duration. We will report on variation in disturbance reaction as it pertains to age/sex character of goat groups, goat habituation and sample induced bias, and goat group size.

GOATS AND HELICOPTER: 7 YEARS OF MONITORING BY THE BUREAU OF LAND MANAGEMENT

Jeff Denton, Anchorage Field Office, Bureau of Land Management, 6881 Abbott Loop Road, Anchorage, Alaska 99501.

The Bureau of Land Management has monitored late June distribution of mountain goats and other wildlife in the Skagway/Haines area since 1995. Monitoring was mandated in a BLM Record of Decision from a joint BLM/FS EA for summer helicopter glacier landings related to tourism. Monitoring was designed to measure primarily mountain goat population and distribution in affected and "control" or non-exposed occupied goat habitats. Preliminary findings indicate there are potential concerns for long-term crucial habitat use and local population viability, as well as a recognized need for comprehensive research on goat short and long term physiology, behavior, habitat fidelity and use patterns by age and sex, and population viability. Meanwhile, demands for helicopter-supported recreation in the area are increasing. The monitoring is approaching a 10-year data base in 2005 for analysis and rigorous statistical scrutiny.

BALANCING HUNTING AND WILDLIFE WATCHING IN SOUTHEAST ALASKA

Matthew Kirchhoff, Alaska Department of Fish and Game, Douglas, AK. 99801
Kevin White, Alaska Department of Fish and Game, Douglas, AK 99801

As interest in recreational wildlife watching increases, biologists are rightly concerned about the effect these activities may have on the wildlife populations themselves. For example, wildlife watching may cause mortality if birds are flushed off nests, young are separated from their mothers, or animals are displaced from favored feeding areas. These impacts can have measurable population effects, and as scientists, we ought to make every effort to understand and quantify those effects. But in doing so, we should weigh those effects against the totality of all human-caused mortality. For example, brown bear viewing may equate with the loss of a small (albeit unknown) number of brown bears

annually from the population on Game Management Unit 4. In this same area, hunters kill approximately 140 brown bears annually. As long as that kill is within sustainable limits, the loss of those bears through hunting is supported as a valid use with positive economic benefit. Wildlife watching should be treated similarly. We need more research to quantify the effects of recreational viewing on wildlife populations, and to guide managers in regulating that activity. We also need to integrate mortality (or reduced fitness) attributable to wildlife watching, with mortality stemming from hunting and trapping in our regulatory process. This integrated approach will guide allocation decisions that are not only sustainable, but also better balanced.

SHOULD WE HABITUATE BEARS TO HUMANS? A CASE STUDY

John Neary, Wilderness Field Manager, Admiralty Island National Monument and Juneau District
Jennifer Humphrey, Pack Creek Bear Viewing Area Ranger

Habituation of bears has been taking place for decades and is well accepted by wildlife watchers, but it remains controversial amongst wildlife managers and hunters. Recent action by the Alaska Board of Game shows their reluctance to endorse habituation as a management tool. Public demand for viewing bears exceeds the supply of available opportunities. With new emphasis being placed upon watchable wildlife opportunities by the State of Alaska and the US Forest Service, what role should habituation play?

Advantages of habituation include closer and longer views of bears, a wider ranger of bear behaviors visible to human watchers, stability and predictability during interactions between humans and bears, and increased access to food resources by habituated bears. Disadvantages from the human perspective include lessening of challenge and risk opportunities in wilderness settings, loss of hunting opportunities, and misperceptions by wildlife watchers about the acceptability of approaching bears and other wild animals.

We explore a case study of the Pack Creek Bear Viewing Area on Admiralty Island, a management success story where habituation is highly encouraged, and we compare it to other different strategies that could be used for viewing bears, such as viewing non-habituated bears from a distance or viewing bears which are also hunted.

MANAGEMENT OF THE KENAI PENINSULA BROWN BEAR: SUCCESS REQUIRES COLLABORATION BETWEEN RESEARCH, MANAGEMENT AND RECREATION

Sean Farley, Chair, Interagency Brown Bear Study Team, Alaska Department of Fish and Game, 333 Raspbery Road, Anchorage, Alaska 99518

Sound wildlife conservation practices should guide recreation planning, especially in areas that have high potential for negative impacts on wildlife and the recreationists. Alaska, despite its vast size, is not exempt from this caveat. Regions that are geographically distinct and heavily used for recreation, such as the Kenai Peninsula, present unique management situations for biologists. We present results from long-term studies on the ecology of the Kenai Peninsula brown bear (*Ursus arctos*), including information on the population's genetic diversity, productivity, and habitat use. Preliminary data will also be presented from a new project investigating bear-human interactions on salmon streams. Finally, potential conflicts between brown bear management and human recreation will be discussed.

EXPLORING THE APPLICATIONS OF GIS TO INTEGRATE SOCIAL AND BIOLOGICAL SCIENCES FOR RESOURCE MANAGEMENT APPLICATIONS

Chad Van Ormer, USDA Forest Service, Craig Ranger District, P.O. Box 500, Craig, Alaska 99921

Recreation managers and researchers are forever exploring the relationships between people and their natural environments. Geographic information system (GIS) technology is a tool that is increasingly being utilized for integrated forest management. GIS is used to capture and store spatial characteristics across the landscape with attached data that describes those characteristics. It has been recognized that recreation management is one discipline that could benefit more from utilizing GIS for management (Wing & Shelby, 1999). This presentation explores the applications of GIS for integrating geographic data, recreation social data and biological data. Examples of past research and current applications using GIS as an integrated analysis tool will be discussed.

CHALLENGES IN BALANCING AESTHETICS, WILDLIFE HABITAT AND PUBLIC SAFETY IN RECREATIONSITES WITH STRUCTURALLY DIVERSE OLD-GROWTH TREES

Paul Hennon, USDA Forest Service, Forest Health Protection, State and Private Forestry and Pacific Northwest Research Station, 2770 Sherwood Lane, 2A, Juneau, AK

Diseased and dead trees provide much of the structural diversity found in old-growth forests of Southeast Alaska. The study of more than 4,000 dead trees from 27 old-growth stands in the "Alternatives to Clearcutting" Study has provided detailed information on different types of tree death, the resulting diversity of woody debris, and patterns of small-scale disturbance. The high incidences of heart rot, dwarf mistletoe, and top defects of living trees furnish additional structures in old forests. Collectively, these various live and dead tree elements contribute substantial wildlife habitat.

While providing beneficial ecosystem functions in many settings, diseased and dead trees conflict with the need to protect the safety of visitors in recreation sites such as campgrounds, cabins, and picnic and viewing areas. To help meet this challenge, we developed a hazard tree management web site tailored to Alaskan forests (http://www.fs.fed.us/r10/spf/fhp/hazard/). It describes a systematic approach to visually inspect potential hazard trees, presents a quantitative means of prioritizing problem trees, and suggests a range of alternative remedial actions. It also gives profiles for the major Alaskan tree species with regard to common defects that lead to tree failure. The goal of this program is to help managers meet legal and moral obligations of minimizing risk of injury to visitors while maintaining the aesthetic qualities of the forest in recreation areas.

POTENTIAL IMPACTS TO BLACK OYSTERCATCHERS AND OTHER SHORE-NESTING BIRDS FROM RECREATIONAL INCREASES IN PRINCE WILLIAM SOUND

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Prince William Sound is expected to undergo a 600% increase in recreational use by 2015. This increase has the potential to impact shore-nesting birds, such as black oystercatchers. We surveyed over 300 km of shoreline in eastern Prince William Sound in 2001 and 2002 for black oystercatcher nests and seabird colonies. We encountered 23 species, over 3500 individuals, 39 black oystercatcher nests, and 4 previously unknown colonies. Highest density of oystercatcher nests was found on Montague Island at the head of Zaikof Bay, the south shore of Rocky Bay, and southern Stockdale harbor to Port Chalmers. We also discovered two mixed arctic tern/mew gull colonies and two arctic tern colonies. Knowledge of these nesting areas is important in making permitting decisions and educating recreationists on low impact use.

RECREATION CARRYING CAPACITIES - EXPECTATIONS, DELUSIONS, AND REALITY

Bill Tremblay, Developed Recreation/Recreation Special Use Permit Manager, Tongass National Forest

The presentation will focus on current work ongoing related to development of site specific recreation carrying capacities on the Tongass National Forest. The Tongass Land Management Plan provides general direction for the management of the social environment but many who participated in the Forest Planning process are just now beginning to realize the impacts of the application of these land management prescriptions. Is the increase in tourism revenue enough compensation to offset a potential change in lifestyles? Have we reached our capacity already? How do we allocate use to different user groups? Comments to the Shoreline Outfitter and Guide Environmental Impact Statement will provide some insight to public, community and agency concerns

ABSTRACTS FOR WILDIFE BREAK-OUT SESSION
February 5, 2003

EVOLUTIONARY DIVERSITY AND ECOLOGY OF ENDEMIC SMALL MAMMALS OF SOUTHEASTERN ALASKA WITH IMPLICATIONS FOR FOREST MANAGEMENT

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The dynamic geological history and naturally fragmented landscapes of southeastern Alaska create an environment with a high potential for endemism. The challenges of managing forest resources are intensified within island archipelagos because of the increased sensitivity of indigenous biota to disturbance and higher rates of extinction, especially among endemic organisms. Early expeditions of the large islands of the Alexander Archipelago (≈1% of all named islands) documented 27 endemic mammalian taxa. More recent studies with modern techniques found that: 1) some reputed endemics showed nominal levels of genetic divergence from other conspecific populations; 2) more divergence existed among some taxa than was reflected in the current taxonomy; and 3) the mammal fauna of southeastern Alaska has a nested structure with complex phylogeographic patterns suggesting multiple colonization events. Unlike most oceanic archipelagos, the nested mammal fauna of the Alexander Archipelago apparently resulted from differential colonization. Of eight taxa examined through detailed phylogeographic analyses, five species showed acute genetic variation and divergence in mitochondrial sequences. Four species (dusky shrew, long-tailed vole, American marten, and black bear) were comprised of coastal and continental clades, whereas ermine showed a third clade (Beringia). Conversely, the northern flying squirrel and southern red-backed vole were represented by relatively shallow divergent lineages. Still, the northern flying squirrel showed a distinct mitochondrial lineage on eleven islands (Prince of Wales Island complex), which exhibited severely reduced genetic variation. Recent ecological studies of endemic populations of northern flying squirrel and southern red-backed voles provide the first quantitative estimates of habitat distribution, demography, and ecological correlates of abundance in southeastern Alaska. The risk of extirpation in managed landscapes is likely less for both reputed old-growth associates than was assumed during the recent revision of the Tongass Land Management Plan because abundant noncommercial forests apparently contribute to breeding populations of flying squirrels, and red-backed vole populations may be able to persist in managed second growth stands. Still, there are important questions for both species regarding the influence of annual population fluctuations on habitat distribution, stand and landscape features that restrict dispersal, and vegetative and structural characteristics of second-growth stands that will sustain breeding populations of both species.

ASSESSING CARRYING CAPACITY OF MOOSE ON THE WEST COPPER RIVER DELTA THROUGH ANALYSIS OF BODY CONDITION

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Moose numbers on the west Copper River Delta have been maintained at 250 animals by hunting pressure. Recent studies have indicated that theoretical carrying capacity for moose could range from 400 to 1600 animals depending on the severity of winter snow conditions. The 1996 Moose Management Plan for the west Copper River Delta increased the population objective to 400 animals by reducing the annual cow harvest. Our objective was to monitor winter body condition of cows during this period of population increase using portable ultrasound. Measuring rump fat during fall and spring would give us an indirect index of quality and availability of winter browse and allow us to assess carrying capacity. From 2000-2001 we conducted 50 captures. More than half the cows captured in fall had greater than 19% body fat (mean = 18.5%). Spring body condition was significantly lower that that seen in fall. Cows in spring ranged from 7.9-15.5% (mean = 10.6%). We consider these levels to represent a healthy spring condition.

TREE SIZE AND DENSITY STRUCTURES IN SOUTHEAST ALASKA

John Caouette, Alaska Regional Office, Juneau Alaska
Eugene DeGayner, Alaska Regional Office, Juneau Alaska

The Tongass National Forest in Southeast Alaska has need for a quantitative forest vegetation mapping system that is more responsive to key resource management and conservation concerns than the current mapping system based exclusively on timber volume. We use existing GIS data resources and existing ground-sampled inventory data to build a predictive forest-mapping model that can better identify stands of interest with respect to economic, wildlife habitat, or conservation values. Our mapping system was developed in three levels. The first level uses GIS data obtained from existing vegetation mapping; the second and third levels use GIS data obtained from maps of relevant environmental factors, such as soils, slope, and aspect. We recommend additional ground-sampling to assess the predictive ability of our model. We conclude that the most appropriate application of our vegetation-mapping model is in forest-level planning or landscape-level analysis rather than site-specific purposes.

WINGING NORTHWARD – A SHOREBIRD'S JOURNEY

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Planned and implemented by a coalition of partners, the distance-learning project, *Winging Northward*, effectively reached children from throughout the Western Hemisphere. Focused on the challenges that migrating shorebirds face, the project included a website, curriculum, and a live, satellite-broadcast "virtual" field trip to the Copper River Delta, Alaska. The project reached well over 100,000 children. While the main thrust of the project is completed, additional evaluation and project materials will be available in the near future.

WILDLIFE POSTERS

KIDS WATERFOWL CLINIC

Dan Logan, USDA Forest Service, Cordova Ranger District, PO Box 280, Cordova, AK 99574
Jason Fode, USDA Forest Service, Cordova Ranger District, PO Box 280, Cordova, AK 99574

The kids waterfowl clinic was held on Aug 17-18th at the Cordova Trap and Gun Club. This was a cooperative project between ADF&G, Cordova Ranger District, Ducks Unlimited and Cordova Trap and Gun Club. The class taught 15 youths the fundamentals of waterfowl hunting. The key points that the class impressed upon the kids were: Gun Safety, Waterfowl Id., Wetland Conservation, Decoy Spread, Duck Calling, Retriever Training, and Shooting Steel Shot. The class was an overall success and gave beginning hunters an introduction to waterfowl hunting and wetland conservation.

BUILDING A RESOURCE SELECTION MODEL FOR MOUNTAIN GOATS IN SOUTHEAST ALASKA: A DATA-BASED APPROACH FOR ADDRESSING CONSERVATION CONCERNS IN A MULTIPLE-USE LANDSCAPE

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Matt Kirchhoff, Alaska Department of Fish and Game, Division of Wildlife Conservation, Douglas, AK
Grey Pendleton, Alaska Department of Fish and Game, Division of Wildlife Conservation, Douglas, AK
Sanjay Pyare, Ecosystem Management Research Institute, Seeley Lake, MT

Spatially explicit habitat models, such as habitat suitability index (HSI) models, are important tools for wildlife managers. They are especially valuable when making recommendations about the effects of proposed human development or other activities on wildlife. Habitat models currently being used in southeastern Alaska to manage wildlife habitat largely consist of expert opinion-based HSI models. These models provide useful conceptual information but are of limited utility due to the subjective manner in which they were derived. Recent innovations in habitat modeling have led to new approaches for developing spatially explicit habitat models that are directly linked to field data and thus scientifically more robust. Such models, termed resource selection function models (RSFs), enable researchers to use distributional data (such as telemetry re-location or survey data) in concert with geo-referenced habitat information (via GIS) to generate a data-based habitat models that enable ecologists to make probabilistic predictions about an individuals use of resources across a given area.

We describe ongoing efforts to develop a RSF habitat model for mountain goats in southeast Alaska. Specifically, we use mountain goat telemetry re-location data collected on 5 different study areas (n = 54 goats, 1200 locations) combined with GIS habitat and physiographic data layers to derive a spatially-explicit, predictive model capable of describing goat habitat use across the landscape. We believe the results of this modeling effort will provide wildlife managers with an important new tool for objectively evaluating patterns of habitat and resource use of mountain goats. This will enable managers to make more effective, data-based decisions when evaluating potential effects on wildlife of human disturbance factors such as, resource extraction, hunting, helicopter tourism, and other recreational activities.