Team Sharks vs. Jets

- Geography of Prince William Sound (Tyler)
- Economical Review of PWS aquaculture and Prince William Sound Ecosystem (Keegan)
- Biology of the Salmon Shark (Heather)
- Salmon Shark Fishing (Sheila)
- Management Plan (Kelly)
Geography

- 25,000 mi²
- Surrounded by the Chugach Mountains
- Formed by a Glacier
- Protected from storm surges
- Largest Islands are Montague and Hinchinbrook
Environment

- Bathymetry influences water flow
- Upwelling and turnover circulates nutrients
- Rich nutrients supports ocean life
- Temperatures, 4 °C to 18 °C summer and –12 °C to 3 °C winter
- East dry, west wet
Communities

- Three major communities
- Valdez is the terminus of the pipeline
- Cordova is a fishing community
- Whittier is the Kenai peninsula’s access point
Alaska and U.S. Fishing Economy

- 12 of nations top 93 ports
- 54% U.S. commercial seafood harvest
- One-fifth of jobs
Prince William Sound

- $35.4 million commercial salmon harvest
- Fishing = 80% of annual income
  - Oil, Tourism, and Sport fishing
Magnuson-Stevens Fisheries and Conservation Act

- Last reauthorized in 1996
  - Expired in 1999
  - Attempts to reinstate in May 2005
- Effects:
  - Wide scope of effect on fisheries
  - By catch, regional vs. national standards, management of marine ecosystems, and fisheries management
  - New fisheries proposal
Prince William Sound Ecosystem

- Estuarine
  - Rain runoff, melting glaciers and icebergs, streams and rivers
  - Wide variety of organisms
Prince William Sound Currents
Prince William Sound Food Web

Apex Predator
Ocra

Fourth Level Consumers
(Seals, Sea Lions, Dall’s Porpoise)

Teritary Consumer
(Salmon, Pollock, Cod)

Secondary Consumers
(Barnacles, Mussels)

Primary Consumers
(Copepods, Larval fishes, Jellyfish)

Primary Producers
(Phytoplankton, Macroalgae, Seagrass)

Detritus

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<table>
<thead>
<tr>
<th>Trophic Level</th>
<th>Biomass in tons per kilometer</th>
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<tr>
<td>Primary producers</td>
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<tr>
<td>Primary consumers</td>
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<td>Secondary consumers</td>
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<td>First level tertiary consumers</td>
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<td>Detritus</td>
<td>114.480</td>
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</tbody>
</table>

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Okey, T.A. and D. Pauly (eds.). 1999  Exxon Valdez Oil Spill Restoration Project Annual Report
Physical Description

- 6 to 8.5 ft long
- 250 to 500 lbs, up to 600 lbs
- Streamlined body, conical snout, large gills
- Low fecundity rate
  - 4 to 5 pups every two year repro. Cycle
- Maturity
  - Males (5 years)
  - Females (8-10)
- Gestation period (9 month estimate)
Range

- North Pacific to Southern CA
- Eurythermal (9°C to 16°C)(5°C,18°C)
- Endothermic
  - Highest body temp. of all sharks
  - Difference in body and ambient temp. 21.2°C
  - “Rete mirabile”
Tagging of Pacific Pelagics (TOPP)
Habits

- Feeding
  - Gulf of Alaska (Prince William Sound)
    - Some migrate to west coast of Canada, some remain in PWS and GOA
  - Opportunistic feeders
    - Predominately salmon
    - Squid, sablefish, Pacific herring, rockfish, capelin, spiny dogfish, arrowtooth flounder, and codfishes
Current trends

- Increased abundance (Alaska Shark Assessment Program)
  - Warming trend, improvement of ground fish production and Pacific Salmon (wild and farmed)
- Increase in local densities
  - By-catch dumping, increase in number of hatchery programs
Salmon Shark

- Market growing worldwide
  - Cosmetics
  - Medicine
  - Leather
  - Fin soup
Australian Shark Fishing

- Successful population monitoring
- Management team
  - Biologists
  - Population Modelers
  - Fishermen
  - Economists
Alaskan Shark Fishing

- Prince William Sound
  - Estimated 30 shark charter boats
  - Limit 1 per day, 2 per year
Individual Fishing Quota

- **Allowable Catch**
  - Determined by population studies
  - Number or poundage of fish evaluated as sustainable

- **Allotment of Shares**
  - Division of allowable catch
  - Generally distributed according to previous individual quotas
Benefits
- Flexibility in adjustment to regulations, market conditions
- Greater economic certainty
- Sustainable balance of supply and demand
- Monitor changes in salmon shark behavior and population
Individual Fishing Quota

- Potential Drawbacks
  - Public perception
  - Imbalance of shares

- Addressing Problems
  - Fishery in Prince William Sound still limited
  - IFQ system could raise allowable catch
Individual Fishing Quota

- North Pacific Fishery Management Council
  - Recommended implementation of IFQ system after halibut population declined sharply
  - Became official in 1995
  - Juneau, Sitka, and Homer
Individual Fishing Quota

- IFQ system
  - Cordova, Valdez, and Whittier
- Final Rule (amendment)
- Small Community Final Rule
  - Ellamar, Port Ashton, Crab Bay, Tatitlek and Chenega
  - Island villages and towns
Research

- Alaska Shark Assessment Program
- Tagging of Pacific Pelagics (TOPP)
- EVOS Trustee Council
  - Gulf of Alaska Ecosystem Monitoring (GEM)
- North Pacific Research Board (NPRB)
Thank You!!

Coach Bruce Rife
Kenneth Goldman
Penny Vadla
Captain Ron Horton
Carmen Field
Moms and Dads