The future of
The Pacific Ocean Shelf Tracking Project (POST)

John Payne
Continental shelves play a key role in the life histories of most marine species.
POST is public, non-profit, community-supported.
Green sturgeon move much further than expected, including northwards winter migrations
Each new species brings a new dimension to our discoveries

Ling cod

Sixgill sharks

White sturgeon

Herring

B. Meloy
Humboldt squid, a deep water sub-tropical species, may threaten fisheries as it extends its range north.
POST was created to answer the question: When and where do juvenile salmon die in the ocean?
It is possible to estimate survival of migratory species like salmon, using receivers deployed in lines.
Salmon survival is a complex puzzle. Diversity exists at all scales.
Behavioral diversity means there are no “one-size-fits-all” answers for management.
Other recent salmon findings:

High mortality in WA and BC Steelhead

Diverse mortality and migration patterns in Strait of Georgia coho

No evidence of lingering effects on the survival of juvenile chinook that passed through Columbia River dams; also, barging fish around dams may not improve their overall survival

Marine migratory behavior of a steelhead-cutthroat hybrid was measurably distinct from both parent species.

Tagging effects evaluated (several species)
Last Year…. This Year…. 

The Globe and Mail

Ottawa aims to undermine extremist schools with aid boost for Pakistan

Canada's stability key to Afghan mission, Oda says, pledging $26-million and emphasizing struggling public school system as 'priority'

Salmon run disaster: 10.6 million sockeye expected...

Only 1.7 million came: Where have all the salmon gone?

B.C.'s Fraser River is usually brimming with life as sockeye 'just boil through' this time of year. Just weeks ago there were predictions of a healthy run, but now 'the river seems dead' as more than nine million salmon mysteriously vanish, creating a fisheries catastrophe.

The Vancouver Sun

Fraser sockeye: Too much bounty?

After three years of inactivity, B.C.'s fishery industry is already struggling to handle the biggest run since 1913

BY DERRICK PENNER, VANCOUVER SUN  AUGUST 26, 2010
POST Legacies

• A proven concept
• A growing physical infrastructure (465 receivers)
• Rapidly expanding base of users and data
  • 49 PI’s and 9 M detections of ~16,000 tags on 18 species
• An increasingly organized telemetry community that includes The Ocean Tracking Network
• Valuable baseline data on survival and migration
• New abilities to test hypotheses about population regulation of marine species on the continental shelves
Looking forward
More observations…

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…particularly on small species
Making best use of tracking data (an example)
Acoustic arrays are most powerful when used in combination with other methods to test hypotheses

Crossin, Hinch, Farrell, Cooke et al.
Methods

1. **Non-lethal biopsy** for physiological markers (gross somatic energy, plasma ions (Na+, Cl-), metabolites (lactate, glucose), sex hormones (T, E₂), stress hormones (cortisol), gill Na+, K+-ATPase, adipose clip for DNA

2. **Acoustic transmitters attached**

3. **Manipulations**
   - Fish held at different temperatures on their way upriver
   - Hormone (GnRH) implants

Results

- Early-entry fish exceed their thermal limits (aerobic capacity)
- Strong correlations between reproductive maturity, preparedness for freshwater, and early entry
- Evidence that fate is set when salmon are >600 km from the river
Another way to integrate tracking data

http://www.ccalmr.ogi.edu/CORIE/hindcasts/database/base_frame.html
(July 2008 salinity estuary)
Improving the macroscope

Smaller tags, better knowledge of tag effects

Mobile receivers carried by animals or seagliders

Integration with other data

OBIS IOOS OTN TOPP etc.
THANKS to the many friends and collaborators who have made POST a success.