Tech Team 3
Leader Anke
Reporter Les

don't need to agree
follow-up to BJ's comment

by knowing where high salinity meets low salinity
can tell a lot about the estuary BH

BJ - many things important to estuarine habitat
Anke agrees many changes since 70s

BJ - last 15 yrs abundance of 4 species
esp 10 by 5 yrs ago species though not as
high, not cause for concern
D. Smelt, Shortfin shad, LF smelt

Michael - shifting baseline
changing view of what is good population

Productivity - linked to
Michael
high outflow good for sturgeon

more certainty re pelagic
than for salmon & sturgeon
more uncertainty re salmon & sturgeon & trends

Most important re salmon:
Ocean, harvest, hatchery, predation,

Anke - know fish
also zooplankton.

don't know microbes important to eco processes

know less re wetlands (permanent & seasonal) &
species that use them

Know:
Aquatic life importance of salinity for distribution
e.g. jellyfish corbula, corbicula

freshwater - largemouth bass
some species benefit from more saline Suisun
Bay
good habitat for species we don't care about

What does habitat mean
many components
salinity
temp
turbidity
food supply
predation
spawning area
geometry - depth, area, volume
gradients
variable, e all time & spacial scale
longitudinal & horizontal

connectivity
zone of max turbidity
very productive relative to other aquatic systems

variability in LSZ essential to resident fish
& not so much for salmon & sturgeon

→ any essential element of habitat can limit habitat

re connectivity
it cannot open water w/ poor habitat not good

when LSZ moves u/s results in less connectivity

~~we~~ certainty re longitudinal salinity gradient
less certain horizontal (salinity of shoals)

know what species are but not
role of LSZ in species in abundance

depends on variety of factor

where species occur
range of habitat
any one of which can limit habitat
under diff. circumstances
variability for each

fundamental disagreement
which of essential attributes has changed?
one side -- driven by flow
other " -- " " changes in nutrient
concentration & ratios
flow master variable
vs
nutrients " "

KP
aquatic life: certainly stocks & trends of orgs
pelagic post 1970
especially pelagic

habit defined

Est habitat is place where sp occur & persist defined by range of attributes
any missing one can have an effect

connectivity important

Est habitat prev page

Particular habitat attributes disagree
diff. to manage uncertainty if fundamental disagreement

Group 2

LSZ is middle of range of habitats

uncertainty used as an excuse (BDCP)
statistical

Agree w/ previous list
flow comes when looking for master variable

Physical attributes of LSZ depends on
where it is
any uncertainty can be addressed through
measurement

LSZ has been ecologically changing
+ 3rd group questions
winter variability of location is not
distinguishable from historical
variability
Fall has changed

Habitat against the shore is important
some uncertainty what is going on @ edges
can address through measurement

~~Move from~~

Some connection btwn +2 & abundance
have remained
ocean water fish doing fine

not so much for anadromous but not related to LSZ

why else is X2 important?
still

Things on salty side still dependent on LSZ
especially living on bottom
Starry Flounder & Bay Shrimp

Connectivity LSZ & Suisun Marsh
increases with seaward X2

Physical Properties have changed
Chlorophyll has gone down
(but a little bit)

If more productivity in LSZ - how much
goes to clams how much goes to fish
Therefore big uncertainty w/ increased
production, stay in benthic or to pelagic

If increase productivity, do in spring

Food web has been irreversibly changed
therefore hard to mgmnt w/ habitat
no more or less critical
Flow is basic element of estuarine habitat

Rhine per van N.
hypertropic to mesotropic

LSZ is getting:
less turbid
Suisun deeper (losing sediment)

Diagreement
agree production decreasing
grazing v. ammonium
Uncertain: to what extent is importance of ammonium to
primary production

Disagreement re
1) move LSZ to Suisun Bay
2) reduce risk of entrainment
Agree on risk that, from LSZ u/s
larger risk of entrainment
Disagreement is important to population
Area of
Plankton & turbidity → plankton
in shallow water

X Agree no master variable
diatom phytoplankton as master to track progress
mycins

Uncertainty -- uncertain re fundamentals or
details/course correction
for " " just measure & adapt

Group 3

More agreement of large scale correlation (status & trends) not causation.
less " re underlying mechanisms

Does this expose where weakness is?

Have info on physical side to predict
not so much on ecological side
because processes not fully understood
Haven't done the work to understand process
Must spend money to understand why things happen
Agree must do that work
Disagree what the answer will be

Which one is most critical now?

All agree re IEP winners & losers
what's driving this?

Re: Master variable
flow & landscape
how to find any other indicator not
~~connected~~ affected to flow & landscape

Need to understand mechanisms

Problem of question interlinge habitat & LSZ

estuarine habitat #LS2

drives of quantity & quality
quantity is easier
more disagreement on certainty of what
is quality? landscape temporal
The more diversity, the more ~~[illegible]~~ & spatial
find what they need variability in habitats ~~[illegible]~~

connection is important to relate connection
to diverse habitat

Uncertainty:
? What is appropriate scale for heterogeneity
scaled to available tidal energy ?
~~[illegible]~~ agreed
Having variability creates ~~[illegible]~~ resiliency
Agree:
design landscape to accomodate
connectivity
scale
location of features

Enright paper on variability
no change