FIFRA and the ESA: U.S. Fish & Wildlife Service Perspective
Differences from NMFS

• In general, analyses will not differ from those performed by NMFS

• Most differences related to breadth of species between agencies
Species

- NMFS manages ~70 listed species (marines turtles, mammals, fish, coral, abalone, seagrass)
- FWS manages ~1300 species

**Animals**
- Birds
- Mammals
- Reptiles
- Amphibians
- Fish
- Crustaceans
- Freshwater mussels
- Arachnids
- Insects
- Snails

**Plants**
- Conifers
- Ferns
- Flowering Plants
- Lichens

Black footed ferret, endangered
Reliance on surrogates

Toxicity data derived from surrogates that may not be closely related taxonomically

represented by

- **Reptiles**
  (alligators, snakes, lizards, turtles/tortoises)

- **Amphibians**
  (frogs, toads, salamanders)

- **Terrestrial inverts**
  (beetles, butterflies & moths, flies, spiders, snails)

- **Freshwater inverts**
  (mussels, damselflies, amphipods, crayfish, shrimp)
Reliance on surrogates

Example: freshwater mussels (surrogate = daphnia)

- US has greatest mussel diversity in world
- ~70% of species in peril
- 73 species listed under ESA
- Generally sessile filter-feeders
- Complex life stages
  - Distinct life stages (glochidia, juvenile, adult)
  - Dependant on host species for reproduction
- Shown to be exquisitely sensitive to some contaminants (e.g. ammonia, copper)
Habitat

- Greater variety of habitats
  - Forest, prairie, karst, wetlands, freshwater, estuarine, mangrove, desert, etc.
- More species with designated critical habitat
  - 594 designations
Data

For many species, our data set is less complete

- Life history
- Population estimates
- Distinct locations

Ocelot, endangered
Routes of Exposure

For terrestrial species, additional routes of exposure must be considered

- Dermal
- Inhalation
- Food web
  - residues in plants
  - soil ingestion
- secondary exposure

Audubon’s Crested Caracara, threatened
Endpoints

Greater breadth of species may lead to different endpoints of effects

- Physiological parameters
- Life history

Pallid sturgeon, endangered
Action Area

Greater breadth of species may lead to different endpoints of effects

• Maybe be more difficult to define
• Must consider both terrestrial and aquatic fate of pesticides

Bluemask Darter, endangered
Listed species as target species

- **F** - Insects
  - 60 species

- **I** - Lichen (fungus + alga)
  - 2 species

- **F** - Rodents
  - 28 species

- **R** - Rock gnome lichen, endangered
Listed species as target species

Plants = 792 listed species

Green pitcher-plant, threatened
Mitigation

- Conservation banking
- Safe harbor agreements

Polar Bear, threatened
Questions?

Desert tortoise, threatened