

## Regal Fritillary Butterfly Fact Sheet

### Fort Indiantown Gap National Guard Training Center (FIG)

- The eastern regal fritillary butterfly (*Argynnis idalia idalia*) was once common in the Northeast but declined over the last 75 years, primarily due to grassland destruction/alteration
- FIG is home to the only remaining population of eastern regal fritillaries
- Habitat is created and maintained by repeated, frequent soil disturbance, patchy fires, and stewardship efforts that create a diverse grassland dominated by native herbaceous vegetation
- Survival and persistence depend on three main habitat components:
  - Larval (caterpillar) host plants: ≥5,000 violets per acre (primarily arrow-leaf violet, *Viola sagittata*)
  - Adult nectar sources: ~150 blooming milkweeds (*Asclepias* spp.) and thistles (*Cirsium* spp.) per acre
  - Native warm season bunch grasses: little bluestem (*Schizachyrium scoparium*) and broomsedge (*Andropogon virginicus*), ~30-40% of vegetation cover
- Current research, monitoring, restoration, and management
  - Mark-recapture surveys – catch and mark regals, provides a population estimate
  - Pollard walk surveys – survey routes walked every week during the summer, population index
  - Larval and pupal surveys – visual surveys for presence
  - Occupancy surveys – time-dependent searches for colonization monitoring
  - Host plant and vegetation surveys – habitat and ecological monitoring
  - Grassland seed collection and native plant propagation projects
  - Prescribed fires to create and maintain quality habitat
  - Mowing, selective herbicide application, manual removal of woody vegetation
  - Planting nectar plants and violets



Eastern regal fritillary identification (left to right): larva (caterpillar); pupa; male regal (white and orange spots on hindwing); female regal (2 rows white spots on hindwing)



Essential habitat components (all native, left to right): arrow-leaved violet, common milkweed, butterfly milkweed, pasture thistle, wild bergamot, field thistle, little bluestem

## Regal Rearing and Reintroduction- Project and Partners



### Project

- Wild caught gravid (pregnant) female regal fritillaries from FIG are taken to Zoo America, Hershey, PA
  - Females are placed in a white paper bag with a violet leaf, brown paper towel strips, and a moist cotton ball
  - Daily, females are fed a sugar-water-egg white solution and bags are checked for eggs
- Eggs are placed in petri dishes and hydrated daily; eggs hatch into caterpillars after about 2 weeks
- Overwinter is the most vulnerable stage of the regal life cycle
  - Newly hatched caterpillars are half the size of a grain of rice
  - Caterpillars will only consume their eggshell before entering winter diapause (hibernation)
  - Caterpillars are placed on paper towel strips in small lidded cups inside of a humid Tupperware container, and then placed into environmental chambers held at a consistent temperature
  - Approximately 50% of caterpillars survive the winter in the lab (much lower in the wild)
- Once they “wake up” in the early spring, the caterpillars feed on the tender, new growth of violet leaves
  - Larval success directly correlates to the availability of the young violet leaves
  - Caterpillars are released to reintroduction sites or back to FIG to supplement the population
  - A portion of cats are kept in the lab to be reared to the adult stage, then released to sites or FIG
    - Before release, an identification code is written in permanent marker on the wings which helps ID individuals and distinguish reared butterflies from “wild” adults
- FIG and ZooAmerica have actively released larvae and adults since 2014

### Primary Partners and Funding

- **ZooAmerica, Hershey, PA:** Rearing facility. Provides a fully equipped laboratory, storage space, staff
- **The PA Game Commission:** Reintroduction sites and assistance with land management
- **PA Department of Conservation and Natural Resources:** Provided initial funding to help create and establish the rearing program with a Wildlife Resource Conservation Program Grant